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THE DOCTRINE OF SURVIVALS: THE HISTORY OF AN IDEA

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I

THE claim of Edward Burnett Tylor to the attention of nineteenth century students of man is often said to rest upon his doctrine of animism, his theory of adhesions, and his concept of survivals. Of these none, perhaps, has found wider and more unquestioned acceptance than the last, which he formally defined in his Primitive Culture in 1871. "When a custom, an art or an opinion is fairly started in the world, disturbing influences may long affect it so slightly that it may keep its course from generation to generation, as a stream once settled in its bed will flow on for ages . . . . an idea, the meaning of which has perished . . . . may continue to exist, simply because it has existed . . . . ." These customs, arts, ideas, and opinions of peculiar durability had been referred to for many years as superstitions. "But the term superstition," Tylor pointed out, "now implies a reproach, and though the reproach may often be cast deservedly on fragments of a dead lower culture embedded in a living higher one, yet in many cases it would be untrue. For the ethnographer's purpose . . . . it is (therefore) desirable to introduce such a term as 'survival' simply to denote the historical fact which the word 'superstition' is now spoiled for expressing, (namely) that the civilization of the people they have been observed among must have been derived from an earlier state, in which the proper home and meaning of these things are to be found."[1]

The cultural materials thus designated have come to form the subject matter of folk-lore, one of the most important and well-tilled areas of humanistic inquiry. Two generations of scholarship have regarded descriptions of the process of survival as adequate explanations of the longevity either of culture as a whole, or of certain types of culture elements. The doctrine is frequently employed as a conceptual tool when problems involving the otherwise undocumented past are set up for solution.

In short, whenever it becomes desirable to account for the existence

[1] E. B. Tylor, Primitive Culture: Researches into the Development of Mythology, Philosophy, Religion, Language, Art, and Custom, 1: 70-72 (New York), 1924.

among contemporary human beings of ideas or actions which bear a more logical, significant, and harmonious relationship to earlier systems of ideas or culture, the illogical and inharmonious "misfits" are called survivals. Whenever, lacking dated historical material, it becomes desirable to sketch a prehistoric way of life, survivals are assembled to form together with archaeological data the historian's palette of colors.

It is commonly assumed that Tylor in formulating this important doctrine followed a procedure too often invoked by students of man and imposed a biological concept upon social phenomena.[2] Darwin's terminology is similar and his slight priority in publication lends plausibility to the assumption. Analysis, however, relieves Tylor of the imputation; for the biologist and anthropologist were dealing not only with different materials but also with different problems.

Darwin's attention in the Origin of Species was directed toward living things whose present variety was currently ascribed to change and the appearance of the organically new. The successful variation, which according to his theory resulted in the appearance of a new species, was obviously incorporated in a living unit made up of a multitude of old elements. Strictly speaking, the stability of these old organic elements in the presence of the competitive struggle was a phenomenon as interesting as the viability of the new. But the form in which Darwin stated his problem freed him from the necessity of dealing with the old. Consequently when he appealed to the idea of survival, it was in the interests of the problem of the new.

Tylor's attention, on the other hand, was directed not toward living things, but toward human culture. Equally interested in the problems of change and the new in cultural terms, his attack was less direct than that of Darwin. Old culture elements, particularly old ideas and practices for whose preservation no satisfactory explanation had been offered, obtruded themselves. He was compelled by circumstances unparalleled in the history of biological thought to apportion some effort to the study of this problem. Hence, while the concept of survival solved a problem for Darwin, and referred to the living, the new, organically fit, appropriate, consistent, and harmonious; survival in culture remained for Tylor a problem to be solved, and referred to the non-living, the old, the culturally unfit, inappropriate, inconsistent, and illogical.

If not to biology then where did the great anthropologist go for his tools of thought? He himself quotes Auguste Comte as saying that "no concep-

[2] W. H. R. Rivers, Survival in Sociology, Sociological Review, 6: 293–305, 1913; S. A. Cook, Evolution of Primitive Thought, Essays and Studies presented to William Ridgeway, 385, n. 1 (Cambridge), 1913. Edited by E. C. Quiggin.

tion whatever can be understood except through its history." What is the history of the doctrine of survivals? The answer is to be found in Tylor's early training in geology; in his participation in the merging of the collecting interests of the nineteenth century antiquarian with eighteenth century ideas of cultural development; his endeavor to parallel the archaeologist's widely heralded series of three ages of material culture with a similar series demonstrating man's mental evolution; but primarily, in his heroic effort to rescue the idea of progress as an organizing principle from the attacks of missionaries, theologians, and satirists.

Tylor, it will be remembered, like many other nineteenth century students of social phenomena, accomplished some of his most distinguished work while still a young man in his thirties, and reached conclusions in the study of man on the basis of training and interest in relatively alien fields. Under his brother's influence he became, for a youth, somewhat better than an amateur geologist. In 1856, at the age of twenty-four, he read Humboldt and travelled in Mexico with the geologist-antiquarian, Henry Christy. The influence of these two men may be easily observed in his first publication, a book on his Mexican travels.[3] In it he carefully checks his own observations of Aztec irrigation systems, temples, sculpture, and stone weapons against those made by innumerable other observers. But to descriptions of geological formations, archaeological remains, and collections of antiquities, Tylor adds, even in this early work, something of his own, namely, a keen interest in popular rites, peasant festivals, the persistent character of old customs, and the similarities to be observed among widely separated cultures.[4]

The elements out of which a later concept of survivals was to be constructed appear early in Tylor's work and are derived from these varied fields of interest. In Anahuac, the juxtaposition of old and new in culture is remarked, together with the surprising failure of the efficient new to supplant the inefficient old. Repeated efforts are made in succeeding publications to isolate the old for inspection, to characterize it, and to find a place for it in the solution of current ethnological problems. It is plain from these earlier writings that the concept of survivals proceeds, as may be seen from the author's reference to "fragments" of "embedded" culture and the use of the term "superstitions," from Tylor's almost equal interest in prehistoric archaeology and the study of popular customs. These fields, however, remained as relatively distinct in Tylor's mind as they were specialized in material, until an attack on fundamental eighteenth century ideas seemed to make a fusion necessary.

[3] Anahuac: or Mexico and the Mexicans, Ancient and Modern. London, 1861.

[4] *Ibid.*, 50–51, 85–87, 100–101.

It will be recalled that eighteenth century thought made a determined effort to erect a science of man upon the foundation of the idea of progress by urging the acceptance of two important views: "first, that the study of European history revealed the fact that there had been a progressive movement of change from ancient to modern times; and, second, that the present condition of 'savage' groups might be taken to represent the early condition of civilized peoples."[5] The effective employment of these ideas, however, was harder for Tylor and contemporary ethnologists to accomplish than for eighteenth century thinkers and Auguste Comte to suggest. And not least among the obstacles to a naïve appeal to the comparative method and a rapid arrangement of a progressive cultural series was the theory that the cultures of primitive people were the results of a change the opposite of progression, namely, one of degradation.

The idea of degeneration occupied a much more important place in English thought of the first half of the nineteenth century than is generally realized. It was a "common opinion," said one ethnologist in 1865, "that savages are, as a general rule, only the miserable remnants of nations once civilized."[6] It was an equally common opinion among followers of Rousseau that civilized man had declined from a nobler primitive state. Wesleyans, still more sweeping, accounted all mankind the products of corruption. And satirists of Darwinism asserted that side by side with the "theory of development by natural causes, lies a theory of degradation by the same causes."[7] The theory of degeneration was often employed by political and religious statesmen to account for their failures in social control or to justify their imperialistic policies. During parliamentary debates on the abolition of the slave trade, frequent efforts were made by supporters of the traffic to prove that the African negro had degenerated from a higher culture or was incapable of improvement. Pro-slavery agitation in the southern states rested flatly on similar theories formulated by American ethnologists. And missionaries, seeking to explain small returns on investments made by homeland congregations in the foreign field, discoursed on the tendency of degraded peoples to relapse after conversion into a prior state of paganism.

Tylor thus reached maturity in an intellectual atmosphere saturated with this alternative to the doctrine of development. But its application to primitive people was apparently brought forcibly to his attention out of

[5] Frederick John Teggart, Theory of History, 90 (New Haven), 1925.

[6] Sir John Lubbock, Prehistoric Times, as Illustrated by Ancient Remains and the Manners and Customs of Modern Savages. London, 1865. .

[7] Letter from Charles Kingsley to Sir John Lubbock in H. G. Hutchinson, The Life of Sir John Lubbock, 1: 91–92 (London), 1914. Also, Charles Kingsley, Water Babies, 85–87, 277 (London), 1880.

the political economy taught by a man whose qualities soon after elevated him to ecclesiastical office. Richard Whately, Archbishop of Dublin, was the author of several books[8] and innumerable articles. There were few subjects on which he hesitated to express himself in conversation or in print. His opinions, though dull and ponderous, carried great weight in England during the forty-year period from 1820 to 1860. Cardinal Newman acknowledged his influence, as did John Stuart Mill; W. Cooke Taylor embodied his views on the degeneration of savages in a two volume work dedicated, with "reverential feelings," to His Grace.[9]

His views obtained wide circulation through a lecture on the Origin of Civilization, delivered and distributed in a cheap pamphlet edition about 1857, during Tylor's formative years. It was a re-statement in popular form, without important additions, of an argument used twenty-five years before in Oxford classes in economic theory. In it Whately, following closely Niebuhr's refutation of "ancient speculation on the progress of mankind,"[10] endeavored to confute those economists who, like Adam Smith, found in a theoretical group[11], or pair[12] of savages, that state of society from which civilization had advanced. The Archbishop's contention started with a horrified picture of the savage as the missionary saw him, gross, naked, ugly, ape-like, abandoner of the aged, practicer of polygamy, perpetrator of infanticide and cannibalism. "Could this creature be noble?" he asked. Was it conceivable that by the division of labor these degraded peoples could "advance step by step in all of the arts of civilized life?"[13] The Archbishop's answer was an emphatic negative, which he supported in part by an appeal to history, in part by an appeal to tradition and conjecture.[14] The origin of civilization, he asserted, could not be found in cultures similar to present primitive cultures because "there is no one instance recorded of any of them rising into a civilized state."[15] "Men left in the lowest . . . . degree of

[8] Introductory Lectures on Political Economy (London), 1831. On the Origin of Civilization, Miscellaneous Lectures and Reviews (London), 1861.

[9] W. Cooke Taylor, The Natural History of Society in the Barbarian and Civilized State: An Essay Towards Discovering the Origin and Course of Human Improvement (London), 1840.

[10] B. G. Niebuhr, History of Rome (translated by J. C. Hare and Connop Thirlwall), 1: 65 (Cambridge), 1828.

[11] Adam Smith, An Inquiry into the Nature and Causes of the Wealth of Nations, 1: 55, 57 (New York), 1901.

[12] Adam Smith, A Dissertation on the Origin of Languages *in* The Theory of Moral Sentiments, 507–508 (London), 1853.

[13] On the Origin of Civilization, 26–27, 30–31, 33.

[14] Introductory Lectures on Political Economy, 76–77.

[15] On the Origin of Civilization, 34.

barbarism . . . . never did, and never can raise themselves, unaided, into a higher civilization."[16] According to the records of antiquity, nations reported to have risen from the savage state "in every instance . . . . had the advantage of the instruction and example of civilized men living among them."[17] According to the accounts of modern explorers, even those primitive people who had been in contact with Europeans for centuries had remained unchanged in the same wretched condition.[18] The Archbishop regarded this historical record as sustained by references in the legends of savages to an earlier and higher state, and by the occasional presence within backward cultures of one or two arts, "not of a piece with their general rudeness." These he characterized as remnants of a more advanced condition.[19]

It is not easy to understand how Whately could have exercised so much influence with arguments in many respects so infirm. The fact remains that he did. The theory of the degeneration of savages, of which in reality he was only a minor prophet, became in the sixties associated exclusively with his name. Defenders of eighteenth century optimism appeared from all points of the intellectual compass. Books were reviewed in terms of his contention.[20] Social reformers expressed anxiety over the alternative views presented. "Is there a definite assured law of progress in human affairs—a slow, gradual ascent from the lower to the higher? . . . . or was primeval man a developed and superior being who has retrograded and degenerated into the savage state? These are grave questions . . . . of high practical intent; for, to know the fundamental law of movement in humanity, is the prerequisite of all wise and successful measures of social amelioration."[21] Men of science and scholarship, such as Sir John Lubbock, felt compelled to assemble materials to demonstrate the unsoundness of Whately's position. As a public-spirited parliamentarian, Sir John acknowledged the fear that "if the past history of man has been one of deterioration, we have but groundless expectation of future improvement."[22] As an archaeologist, he endeavored to restore the modern savage to the good graces of European

[16] *Ibid.*, 42.

[17] *Ibid.*, 35.

[18] *Ibid.*, 34.

[19] Introductory Lectures on Political Economy, 76.

[20] Reviews of Charles Kingsley, Water Babies (Anthropological Review, 1:272–276, London, 1863), and E. B. Tylor, Researches into the Early History of Mankind (Anthropological Review, 3:248–265, London, 1865).

[21] Sir John Lubbock, Origin of Civilization and the Primitive Condition of Man, Mental and Social Conditions of Savages, iv, New York, 1871.

[22] *Ibid.*, 323.

opinion by asserting that not only was there "no evidence of any general degradation" among them, but that the most horrible customs were often the outcome of a belief in a future state or other equally good motive.[23] So great was public interest in the matter that Lubbock's anti-Whatelean arguments, delivered in 1867 before an important meeting of the British Association, attracted an unusually large audience "composed of the very elite of Dundee society." And at the following meeting in 1868, the same paper was the subject of an extended discussion in the Anthropology Section in which major men in the field participated.[24] As one of the vice-presidents of the section, Tylor was present at this debate and undoubtedly shared the anxiety of others advocating the employment of the idea of progress in the study of man. An inspection of his work reveals, however, that he was not content with a merely logical rebuttal. He endeavored to assemble the literature on the theory of the degeneration of savages,[25] and formulated the concept of survivals in order, in his own words, to give the development theory "the upper hand."[26]

II

To secure a progressive cultural series by the employment of the comparative method, it was necessary, as a first step, to find among present backward and non-historical peoples, one whose cultural state could be equated with the earliest condition of an advanced or historical people, and be regarded therefore as the first, or original stage, out of which all other stages of culture had developed. This was a problem of some interest to travelers and naturalists and the occasion of continuous controversy. "Cook, Darwin, Fitzroy and Wallis were decidedly in favor . . . . of the Fuejian; Burchell maintained that the Bushman are the lowest. D'Urville voted for the Australians and Tasmanians; Forster said that the people of Mallicolo 'bordered the nearest upon the tribe of monkeys'; Owen inclines to the Andamaners; others have supported the North American Root-diggers; and one French writer even insinuates that monkeys are more human than Laplanders."[27] The degeneration theory of savages denied the validity of the comparative method and nullified the value of this absorbing secondary problem. To Tylor it "practically resolved itself into two assumptions, first, that the history of culture began with the appearance on earth of a

[23] Lubbock, Prehistoric Times, 337–362.
[24] Anthropological Review, 6: 84–86 (January), 1868, and 7: 415–423 (October), 1869.
[25] Tylor, Primitive Culture, vol. 1, chap. 2.
[26] *Ibid.*, 2: 357.
[27] Lubbock, *op. cit.*, 445–446.

semi-civilized race of men, and second, that from this stage culture has proceeded in two ways, backward to produce savages, and forward to produce civilized men. . . . ."[28] If, as Whately maintained, backward peoples were themselves the product of a process the opposite of development, not only was the first step in the application of the comparative method blocked, and the construction of a progressive series precluded, but the envisagement of social change in terms of the idea of progress was prohibited. To restore to European thought its faith in progress, primitive peoples must be shown to fall into their appropriate initiatory position in the developmental series.

Confronted with this problem, Tylor's interest in prehistoric archaeology and folk-lore gave him access to two bodies of material. The first was composed of weapons, tools, and bits of pottery "garnered in the grave, chance found amid lacustrine deposits and peat mosses," associated with the lives of human beings who had lived in various northern European areas in the unrecorded and forgotten past. Once these "private hoards of nick-nackets"[29] had been assembled in museums and distinguished from the remains of Roman invaders, their classification and arrangement into the evidence for three or more prehistoric stages was rapid and convincing. The work of Thomsen, Boucher de Perthes, Worsaae, and others was fresh in the minds of all ethnologists.

The second body of material was composed of the strange practices, inexplicable beliefs, and irrational ideas of people living in the present. These phenomena, however, had not been handled with any degree of success. In fact, they had not been approached from the standpoint of social or any other science.[30] It was well known by more acute observers of human behavior that men, in every other way like themselves, entertained superstitions or what were called for lack of a better term "intellectual crochets,"[31] "nonsensical and stupid opinions,"[32] "fond and foolish customs;"[33] that explanations of phenomena which were untenable to the thinking man were widely accepted; that practices were maintained and rites observed which were out of keeping with modern thought. Furthermore, these quaint and wayward bits of intellectual and cultural flotsam, like ancient coins or

[28] Tylor, *op. cit.*, 1: 35.

[29] Daniel Wilson, Pre-historic Annals of Scotland, 1: 20–21 (Edinburgh), 1863.

[30] Except in the field of mythology. Andrew Lang offers a brief history of the ancient and modern efforts to account for the irrational element in myths in his Myth, Ritual and Religion, chap. 1 (London), 1887.

[31] Tylor, *op. cit.*, 2: 16–17.

[32] *Ibid.*, 1: 94.

[33] John Brand, Observations on the Popular Antiquities of Great Britain, xi (London) 1813.

shards of pottery, had long been of interest to the collector and had been written down, classified, and contemplated as "a fashionable study."[34]

In so far as any attempt had been made to account for the irrationality of these cultural odds and ends, antiquarians had appealed to sources familiar to classical archaeology or to religious prejudices. Commentators on "vulgar errors" in the seventeenth century and collectors of "popular antiquities" in the eighteenth, envisaged these repudiated beliefs and rituals of the ignorant and rural, somewhat as Bacon described the remains of classical antiquity, as "history defaced, or remnants that have escaped the shipwreck of time."[35] Aubrey[36] and Bourne,[37] like Sir Thomas Browne with his Roman burial urns and other antiquarians with their coins, characterized old wives' tales and village superstitions as "remains," "vestiges," and "relics." While John Brand, with a later and firmer grasp on material and non-material culture, remarked with finality, that "vulgar rites and popular opinions . . . . are mutilated and, as in the remains of ancient statuary, the parts of not a few have been awkwardly transposed; they preserve, however, the principal traits, that distinguish them in their origin. Things composed of such flimsy Materials as the fancies of a multitude, do not seem calculated for a long duration, yet have these survived shocks, by which even Empires have been overthrown, and preserved at least some Form and Colour of Identity, during a Repetition or Changes, both in religious Opinions, and in the Polity of States."[38]

In short, it was plain to antiquarians that superstitions, irrational ideas, and folk-tales were among the older elements of non-material culture, and bore a documentary relationship to the lives of human beings who lived in the past; that they were present results of some process of cultural preservation; and that, in the case of folk-tales, folk-dances, burial rites, and similar practices, they had been transmitted by some form of folk-memory. But until Tylor appeared, the question of advancing beyond the romantic, observational, and collecting stage in dealing with them had not been broached. Their illogical and anomalous position within the culture pattern set up a preliminary problem of such magnitude that no one felt able either to account for it, or, having accounted for it, to pass on to the utilization of the material in the further study of man. The very irrationality which had at-

[34] *Ibid.*, xiii.

[35] Francis Bacon, (1551–1626) Advancement of Learning, 103 (New York), 1901.

[36] John Aubrey, (1626–1697) Remaines of gentilisme and judaisme. London, 1881.

[37] Henry Bourne, (1696–1733) Antiquitates vulgares. (1725), *in* John Brand, Observations on Popular Antiquities (London, 1777).

[38] Brand, *op. cit.*, iii-ix.

tracted the attention of collectors of the quaint had all but alienated the interest of the scholar.

When Tylor, in need of an argument to defeat degenerationism, was brought face to face with these two bodies of human material, their arresting similarities suggested a means not only of reconciling their differences but also of confirming his belief in the validity of the theory of development. Both were useless, inconsistent, and out of harmony with contemporary culture. No Britisher in the sixties would have relied for self-defense on a chipped flint arrowhead. And although strange gods were occasionally invoked at British wells and decisions rendered by the key and the book, those who appealed to such non-orthodox and extra-legal devices regarded them as ends in themselves; as folk-ways which were as unrelated to current need and statute as was the arrowhead to the high-powered rifle. Nevertheless, the excavated arrowhead, while of no use to the man-in-the-street, was of surpassing utility to the student of the past. As found it was often a fragment. It had obviously undergone many vicissitudes of weather and soil. But it had plainly been fashioned by an earlier human hand and could have served an earlier man in time of need. Given a small piece, the archaeologist could not only recover the outline of the original implement, but with its help could imaginatively reconstruct much of the life and culture of the men to whom it was once a necessary means of self-preservation. With these facts in mind, Tylor the archaeologist gave Tylor the collector of popular antiquities his assistance; and together they were enabled conceptually to lift the inexplicable, irrational, inconsistent, and anomalous in present advanced non-material culture out of its incongruous modern matrix; to account for it in terms of strips and tatters,[39] cultural fragmentation or decay,[40] mutilation[41] or dwindling;[42] and more important, to employ it for purposes of documenting prehistoric and savage culture. For although the results of an effort to retrieve the outlines of a "dwindled," "decayed," or "mutilated" practice or belief might be more debatable than the results of the same effort applied to a piece of earthenware, once recovered and labeled as a practice or belief of prehistoric Europeans, the collector of vulgar rites and opinions had only to take a familiar next step and identify that state with the culture of contemporary savages. With that step the comparative method was vindicated, the modern savage rehabilitated and

[39] E. B. Tylor, On Traces of the Early Mental Condition of Man, Proceedings of the Royal Institution of Great Britain, 5: 93, 1866–69.

[40] E. B. Tylor, Primitive Culture, 2: 136–137.

[41] E. B. Tylor, The Religion of Savages. Fortnightly Review, 6: 71–86.

[42] E. B. Tylor, Primitive Culture, 1: 78, 136–137.

reinstated in the developmental series, and the idea of progress rescued for the nineteenth century.

Tylor was the author of over two hundred and fifty papers and five books, all of singularly high and even quality. The two treatises for which he is remembered[43] were published in 1865 and 1871, during the first ten years of his working life, a period spent almost entirely in satisfying himself that social development rather than social degradation was the rule. His work was early remarked by his contemporaries for the penetration with which he recognized materials hitherto unknown or neglected,[44] and the originality with which they were employed. But this absorption in furthering the project of demonstrating the validity of the idea of progress as a principle of arrangement overshadowed every other consideration. Although Tylor was alert to all the problems of mid-century ethnology, his judgment of other scholars was often dependent upon their willingness to be equally certain of its applicability. In reviewing even so learned a man as Wilhelm von Humboldt, Tylor regretted that although he divided the array of known languages into three great classes, "he treated these stages of languages as belonging rather to an ideal than to an historical progress."[45] Tylor formulated theories with scientific tentativeness, but the reader of his earlier and more vigorous work cannot avoid the conclusion that their structure and merit are derived from the emotional zest with which he entered the lists in favor of the progressionists.

Whately's indictment of contemporary savages contained two counts. One rejected them as products of degeneration from the developmental series. The other denied them the power of unassisted improvement. There are indications that Tylor was familiar from the first with the analogy which had from time to time been drawn between archaeological finds and the rural antiquities collected by such men as Aubrey, Bourne, and Brand. But he did not employ it, nor did he designate it as the doctrine of survivals, until he had made several other efforts to meet the clergyman's contentions.

The earliest and least successful counter-argument seems to have been borrowed from that side of a current controversy over the negro's place in nature which relegated the black men to a separate species and intercalated him in the series above the apes but below the whites. Unmoved by racial

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[43] Researches into the Early History of Mankind and the Development of Civilization (London, 1865) *and* Primitive Culture: Researches into the Development of Mythology, Philosophy, Religion, Language, Art, and Custom (New York, 1924).

[44] Report on Researches into the Early History of Mankind, Anthropological Review, 3: 248 (October), 1865.

[45] E. B. Tylor, Science of Language, Quarterly Review, 119: 394–435.

and economic prejudices, Tylor had no desire to degrade a backward people. He wished, on the contrary, to refute Whately by finding evidence that all primitive peoples, including negroes, were already in a state of advancement over a semi-human group still lower in the scale. In order to achieve this purpose, he appealed characteristically to the materials with which he had begun to familiarize himself, namely, the folk-lore and myths of men living as beasts among beasts and of children nurtured by animals. But when these were weighed and sifted in a paper entitled, Wild Men and Beast Children, written when he was thirty-one years of age, he was forced to come to the reluctant conclusion that the evidence proved nothing "except the existence of the stories . . . . and . . . . of people who believed them."[46] Whately remained unanswered.

It was Tylor's conviction, followed in laborious personal practise, that more profitable work could be done by collecting data than by spinning theories. He objected with particular emphasis to the construction of sweeping generalizations on the foundation of one or two unchecked facts. Said the scientist to the philosopher, "If self-improvement is to be denied to the savage, the least that can be asked is a good number of cases of tribes who have had a fair trial under favorable circumstances and have been found wanting."[47] In the Archbishop's disregard of some of the more obvious rules of evidence, the anthropologist, therefore, found cause for criticism which he was not slow to take. Whately's statement that primitive man could improve only after contact was described as a speculation reached "in beautiful ease and confidence" without supporting data. Furthermore, the theologian was successfully convicted of violating the context of a passage in Darwin's Voyage of the Beagle and of wilfully suppressing statements which would have weakened the case for the degenerationists.

It was one thing to criticize the scanty selection of facts brought forward by the degenerationists to sustain their claims that savages were fundamentally different from Europeans and lacked the European's assumed innate power of invention and self-improvement. It was quite another to prove the contrary,—to prove that the miserable native of Tasmania or Tierra del Fuego, whom Whately delighted to dishonor, could lift himself unaided to a knowledge of the fine arts, an elevated level of religious thought, and a British standard of family life.

It was plain to Tylor that a verdict in favor of the progressionists could never be reached if the missionary's conception of primitive culture pre-

[46] E. B. Tylor, Wild Men and Beast Children, Anthropological Review, 1: 32 (May), 1865.

[47] E. B. Tylor, Researches, 160–163.

vailed among scientists. Throughout his work he repeatedly deprecated the want of liberal judgment among the clergy at home and overseas and deplored their proneness to sneer at what they did not take the trouble to understand.[48] He was convinced that their scale of cultural values could not be accepted as the basis of ethnological study and he tried to neutralize Whately's stern condemnation of savage vices by drawing up a friendlier catalogue of their moral virtues. The Archbishop was reminded somewhat tartly that the civilization of Europe, which he had made the capstone of human achievement, was not always virtuous. According to Tylor, it might very well mean merely that men "have learned to give poison secretly and effectually . . . . , have raised a corrupt literature to pestilent perfection . . . . , have organized a successful scheme to arrest free inquiry and proscribe free expression."[49]

It was plain to Tylor, furthermore, that raw facts, no matter how numerous, had no theoretical value without arrangement and utilization with reference to the central, unsolved problem of social development, namely, the original diversity or similarity of the human mind. If, at last, the facts supported the assumption of original mental differences, a view widely held at the moment among ethnologists swayed by the arguments of pro-slavery agitators, the cause of the progressionists was lost. Men and cultures might be subject either to advance or decline. If, on the other hand, the data supported the assumption of original unity, equality, and similarity, primitive man, like European man, bore in him a common human capacity for self-improvement. Those of Tylor's predecessors who, like him, were committed to an optimistic view of man's past and future, had been content with amassing likenesses in culture in order to prove similarity of mind. Tylor, more discerning, realized that heaping up illustrations was not proof; that correspondence in custom did not necessarily arise from correspondence in origin. It was clear that the obvious likenesses between the activities of present primitive peoples and the peoples living in the early stages of historical or European cultures might be due to borrowing, in which case the progressionists were again unsupported. It was possible, on the contrary, that like practices and ideas were due to common inheritance or independent invention, in which case the cause of the progressionists was safe.

Tylor's first important book entitled, Researches into the Early History of Mankind and the Development of Civilization, published when he was thirty-three years of age, is composed of essays which address themselves

[48] E. B. Tylor, Review of Max Muller, Chips from a German Workshop, Fortnightly Review, 9: 227–228.

[49] E. B. Tylor, Primitive Culture, 1: 28.

to various aspects of this matter. It is a milestone in anthropological thought for two reasons. It contains the long overdue three-fold division of the problem of similarities. It also formulates the results of a first tilling of "great masses" of material on the "early history of man" which had "long been forthcoming" but had as yet been turned to little account.[50] It had been the habit of contemporary ethnologists to seek solutions of human problems in terms of anatomical description and physical comparison of peoples. Antiquarians, archaeologists, collectors of folkways and ballads, mythologists, philologists, and students of comparative religions had pursued their separate ways, out of touch with each other and with ethnology. Although not the first to lay several of these studies under tribute, Tylor is notable for the mastery which he secured over their literatures. In the Researches, he drew heavily on his philological studies. The examination of similarities is carried on in terms of gesture language, picture writing, and, to a lesser extent, archaeological materials. As a result of this inspection he came to the conclusion that if "the similar thing has been produced in two places by independent invention then . . . . it is direct evidence of the similarity of (the primitive) mind (everywhere, at all times). And on the other hand, if it is carried from one place to another . . . . then the smallness of the change it has suffered in transplanting is still evidence of the like nature of the soil (mind) wherever found."[51] In short, similarity of custom, whether due to invention, inheritance, or borrowing, strongly suggested to Tylor the similarity of the inventing or borrowing minds, and supplied added data for meeting the arguments of the degenerationists.

The Researches, assuming its conclusions to be unassailable, reinstated the savage in the progressive series. Tylor, however, was too well aware of the difficulties involved in arriving at the sources of similarities to be satisfied with his case as it stood. He began immediately upon the construction of a new argument based upon still newer materials. The plan of this argument was designed to uphold primitive man in his restored status. He had been endowed with mental qualities similar or equal to European man; it was now to be maintained that he was modern man's cultural ancestor, whose ideas and practises had been handed on and cherished in a direct line. In assembling evidence to sustain this position, Tylor was not unmindful of the persistence in an unchanged form of savage culture elements in advanced societies. But under the influence of his archaeological and geological training in the reconstruction of the past on the basis of fragmentary remains, he was led to ignore this group of facts. He referred to

[50] E. B. Tylor, Researches, 2.

[51] *Ibid.*, 373 (parenthetical explanations are added to Tylor's text).

them as of negligible interest, illustration of "mere permanence of culture."[52] His attention was captured by ideas and practices which, like the archaeological fragments, seemed to him to bear the scars of history in their present "dwindled" or "mutilated" condition. He preferred to collect survivals, materials which presented indications of the loss of utility through wear and tear or displacement. He felt, furthermore, that these new antiquarian mines of historical material could be contemplated with less distraction than "those seething problems of the day on which action has to be taken amid ferment and sharp strife." He believed that the ethnographer's course "should be like that of the anatomist who carries on his studies on dead rather than on living subjects."[53]

Primitive Culture: Researches into the Development of Mythology, Philosophy, Religion, Language, Art, and Custom, which appeared in 1871, and two papers, read before the Royal Institution, which preceded it, were drafted manifestly to carry out this program of apprehending old ideas as old artifacts. The use made of the doctrine of survivals differs in the two papers. In the first, On Traces of the Early Mental Condition of Man,[54] "old notions in a modified condition" are employed as clues to the past, and a trial reconstruction of the early mental state of man is attempted. In the second, On the Survival of Savage Thought in Modern Civilization,[55] interest in the recovery of an earlier state is temporarily dismissed and the problem inverted. The doctrine of survivals is invoked in order to explain phenomena in the present which had hitherto been inexplicable.

Primitive Culture is the mature statement of a seasoned scholar. In it Tylor wisely chose to return for review to his original problem, progression versus degradation, and to the arguments for each side of the controversy. Although he remained convinced that "the main tendency of culture from primeval up to modern times" was from savagery to civilization,[56] he acknowledged other modes of connection such as degeneration, survival, and revival.[57] He also admitted the possibility that degeneration might operate more actively in lower than in higher cultures.[58] He met Whately's strongest argument for degradation, the absence of historical evidence for an unaided transition from savage to advanced culture, with a liberalized definition of the materials to be admitted as testimony. He deplored the reliance

[52] E. B. Tylor, Primitive Culture, 1: 70.
[53] *Ibid.*, 1: 158.
[54] Proceedings of the Royal Institution of Great Britain, 5: 83–93, (March 15), 1867.
[55] *Ibid.*, 5: 522–535 (April 23), 1869.
[56] Tylor, *op. cit.*, 1: 21.
[57] *Ibid.*, 1: 17.
[58] *Ibid.*, 1: 46.

of students of man upon the speculations of historians and the tales of travelers in the new world. He pleaded for the exploration and study of philology, archaeology, and "old traditional folk-lore." In support of this plea, he pointed out that the study of philology had already bought out the "undesigned history of language." He reminded his readers that archaeology not only displayed the "old structures and buried records of the past," but did so with such force and convergence of testimony that the theory of degeneration was resisted rather than required.[59] The virgin territory of folk-lore, though undated, he regarded as susceptible to sequential arrangement.

The data of archaeology is little used in Primitive Culture, except as a guide to the theory of development illustrated by the serial arrangement of artifacts.[60] Language is discussed as a means of sustaining the right of primitive people to a place in the series, but secondarily, and with repetition from the Researches. Tylor's most vigorous efforts were given to the search for existing but outworn practices and ideas which could be traced to an early stage of advanced culture and paralleled with similar elements in the cultures of existing savages. In choosing survivals with which to demonstrate the value of this procedure, he made no attempt to be exhaustive. Following the example of the collectors of ancient and medieval vulgar antiquities, he gave the pastimes of children, nurses' fables, games of chance, riddles, proverbs, the arts of divination, and the obviously quaint first attention. In children's games were to be found, according to the doctrine, a record dwindled to sportive survivals of the playful imitation by little savages of the serious and often warlike activities of their elders.[61] Arts of divination, gambling games, and traditional sayings were to be regarded as documents, broken down or faded by time, by which primitive man's philosophical system might be recovered. Owing somewhat to the theological source of the attacks on progressionism and somewhat to the relatively untapped reservoirs of material on religious practices, Tylor's major work was done in this field. Myths were scrutinized for their underlying principles, savage rituals were analyzed to find "the deeper motive which underlies them," and "the fundamental animism of the lower races" was traced in broken but developing outline "into the higher regions of civilization."[62] Thus Tylor reached the conclusion, so important to succeeding students of religion and culture, that "the belief in the animation of all nature"

[59] *Ibid.*, 1: 42, 53, 61.
[60] *Ibid.*, 1: 68.
[61] *Ibid.*, 1: 78.
[62] Tylor, *op. cit.*, *passim*.

which arose in the "savage condition prevalent in remote ages among the whole human race"[63] stands unaltered among living primitive peoples as if it grew there, and survives as an ancestral relic among the European peasantry.[64] Thus the book ends on a note of optimism, linking the doctrine of survivals to nineteenth century aspiration for social improvement by asserting that it is the "office of ethnography to expose the remains of crude old culture which have passed into harmful superstition and to mark these out for destruction."[65] Thus a final answer was made to the Archbishop in terms of his own specialty.

In appraising Edward Burnett Tylor and his doctrine of survivals, it becomes apparent that in formulating it he filled the rôle of a conserving rather than an innovating figure. He directed his efforts toward patching rents in the eighteenth century methodological fabric rather than toward attacking the problem of differences in culture from a new point of view. Although he was less ready than many of his intellectual generation to accept all similarities in manners and customs as of equal evidential value in the reconstruction of the early history of man,[66] there were other old methodological ideas to which he loyally adhered. With his contemporaries he accepted the idea of progress or development and employed the comparative method. With them, he utilized clues afforded by excavated artifacts. Like them, his attention was caught by the irrational but tenacious character of some beliefs and practices. This he ascribed to their greater age and their derivation without development from savage ancestors. The identification between what was regarded as the functionless old among advanced peoples and non-material culture elements among backward groups, he accepted as made by predecessors. For purposes of reconstruction he likewise accepted the identification between the folk-lorist's materials and the archaeologist's discoveries of ancient earthenware, stone, and metal objects.

It is of interest to note that even after committing himself to the guidance of archaeology, Tylor, the folk-lorist, could not remain rigidly faithful to the analogy. Survivals of non-material culture in the strict sense of the doctrine were dead matter, mental fragments broken off from mental structures. In his mind, however, they could not so remain. The claims of a still more ancient concept, that of motion or change modeled on organic growth, tempted the writer, if not the thinker, to speak of them as "rudi-

[63] *Ibid.*, 2: 283.
[64] *Ibid.*, 2: 357.
[65] *Ibid.*, 2: 453.
[66] Teggart, *op. cit.*, 108–109.

mentary," "germinal," "living-on," or "out-living" other elements. The choice of the word "survival" as a taxonomic device is another illustration of the same influence. Tylor recognized that the presence of an old ritual, an old superstition, or an old folk-tale sets up a problem of persistence which does not arise in connection with old artifacts made of stone or other durable material. The architect's and the archaeologist's classificatory use of the term "vestigial" failed to meet this need. But the term "survival," with its implication of a potentiality to over-live the mortal span of life, tempted and won him.

Tylor's contribution in terms of the doctrine of survivals resolves itself, therefore, into the reiteration of assumptions which for several centuries had lain side by side in thought, if not in synthesis. And the popularity of the newly christened, if far from new-born, doctrine was in no wise arrested by Darwin's dramatic but different use of the same term.

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AN ANALYSIS OF THE NORTHWESTERN CHIHUAHUA CULTURE[1]

By HENRY A. CAREY

Introduction

CHIHUAHUA is a northern frontier state of Mexico, bounded on the north by New Mexico and Texas, on the east by Coahuila, on the south by Durango and Sinaloa, on the west by Sonora. It is largely desert land, except the western portion where the Sierra Madre range extends almost its entire length and continues southward.

The region with which this paper is concerned lies in the northwestern part of the state, the extension being from the United States boundary to an undetermined distance south of the Mexican town Temosachic. The intervening distance is roughly 250 miles.

The northern part of this area is a plateau 4,000 feet in altitude, with hills here and there which are barren of vegetation except for mesquite bushes and varieties of herbs. Through this plateau the Rio Casas Grandes, whose source lies far to the south, cuts its course and makes a great bend southward, in the rainy season emptying into Lake Guzman some 60 miles south of the American border. In the dry season no water flows in the channel. The Mimbres valley of southern New Mexico is in the same drainage, but its waters are absorbed in the sandy soil long before reaching the lake.

Following the direction of the Rio Casas Grandes southward one enters a long, wide valley formed by the Capulins and the Sierra de la Escondida to the east, and the Sierra Madre to the west. It is about 50 miles in length and 20 miles in width. Here the river flows the year round, the soil is plentifully watered and fertile along its reaches, and crops in abundance may be grown. Land rich in grasses provides ample sustenance for the raising of cattle. This locality is known as Casas Grandes valley. Several Mexican towns have arisen here, the most important being Colonia Dublan, New Casas Grandes, Colonia Juarez, and Pierson (see fig. 1).

South of Pierson the Sierra Madre makes a great swing to the east, forming the southern limit of the valley, and its summit rises to an altitude of 8,500 feet. Across this divide, 50 miles south of Pierson, in the midst of the range is a plateau, the length of which is about 30 miles and the width 15 miles. This is Babicora plains, well watered and fertile, where ranchers now grow corn and raise cattle. Still further south in the mountains Mexican settlements have sprung up where opportunity for livelihood by farming

[1] Submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Faculty of Philosophy, Columbia University.

or cattle grazing is offered. Throughout its entire extent in this region the Sierra Madre is rugged and in places almost impassable. Deep canyons drop hundreds of feet to rushing streams below, while the flora, consisting largely of white pine, madrona, century plant, and cactus, clothes the

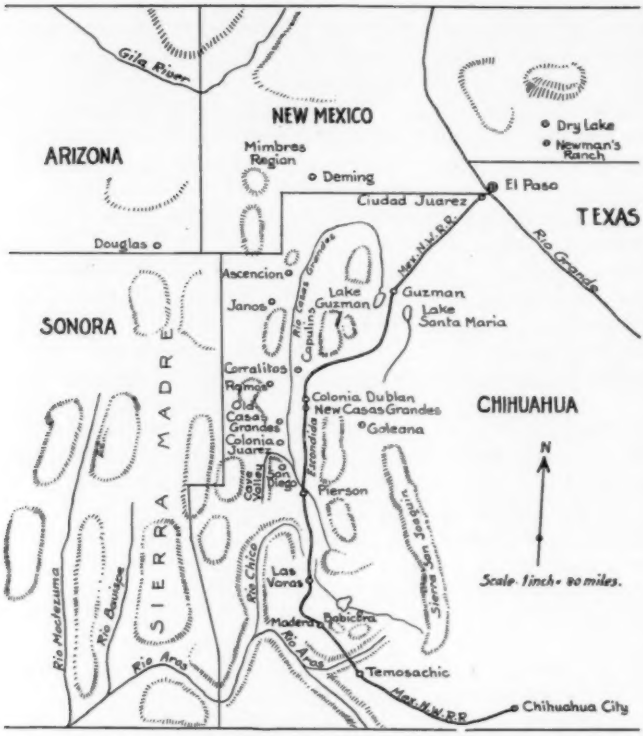

FIG. 1. Northwestern Chihuahua.

mountainsides thickly. The fauna is of the same variety as that in the American Rockies. Bird life includes the macaw and the giant woodpecker.

Through this district, connecting El Paso with Chihuahua City, the state capital, and touching at the more important settlements, runs the

Mexican Northwestern Railroad, a line built to promote the lumbering industry at Madera.

In the region just described an Indian culture once existed. Earth mounds of varying size occur in Casas Grandes valley along the watersheds. At one site there are "casas grandes" or great houses of adobe, only the broken walls of which now remain. To the south, in the Babicora plains district, and continuing in sporadic groups an undetermined distance southward, are other mounds.

About 15 or 20 miles to the west of Casas Grandes valley in the canyons of the Sierra Madre are many groups of cliff-dwellings of wood and adobe. They are built across the mouths of caverns or under overhanging cliffs. The inhabitants have long since disappeared and have left no trace of their ultimate destiny.

In years past many of the mounds of the Casas Grandes have been opened by Mexicans in search for antiquities which could be sold. These mounds contain the remains of ancient Indian communal dwellings of adobe, walls broken down, but still possessing coatings of plaster. Beneath the floors, usually below corner walls, the burials occur. Surrounding the skulls, ceremonial objects are found, including pottery, carved stone images, stone and shell beads, turquoise ornaments, copper bells, and other articles.

Quantities of this archaeological material have been introduced into our American museums through Mexican speculators in pottery, and thus important cultural features have presented themselves. However, as yet few definite conclusions have been reached, first, because data as to specific site of origin or conditions found in excavation are lacking; secondly, prior to my attempted excavation in 1928, very little systematic work had been conducted in the region.

Since archaeological investigation in the region has been scant it is necessary to ascertain its development as well as its relationships so far as possible and to classify it accordingly. Internal relationships are defined as those occurring between centers within the general culture-province itself, by which the relative homogeneity of culture traits is disclosed and the extent of the culture determined. If there is homogeneity between centers and the traits are sufficiently differentiated from those of contiguous areas, the province may be treated in general comparisons as a unit, or, in ethnological terminology, as a culture area. External relationships are defined as those existing between two or more culture areas.

An archaeological investigation here is important for three reasons. It is important, first, to discover the relationship of the cliff-dwelling culture of the Sierra Madre and the mound culture of the open country. Further,

the place of these cultures in their relationship to the better known cultures of contiguous regions may be ascertained. Finally, a study of the local and more extended relationship of the cultures of the Chihuahua province will undoubtedly aid in the interpretation of some of the present obscurities of Southwestern archaeology since it was apparently one of the connecting cultures between Mexico and the Southwest.

Analysis and Distribution of Pottery Types

In this region deposits of rubbish in which stratigraphic data might be obtained are, up to the present time, unknown. Cross-finds of Chihuahua pottery by which relative time relations with contiguous areas might be ascertained have been located at but one site in subareas of the North American Southwest.[2] Excavation by myself and my assistants in earth-covered mound houses exposed potsherds lying at varying depths between the ground surface and the house floors, but the determination of a sequence of pottery types from such data would be meaningless because burials accompanied by many types of the pottery occur beneath the floors. One refuse deposit four feet deep, showing a changing series of pottery types, was located on the Corralitos ranch. In the south, on Babicora plains, superposed floor levels in mound houses disclosed a difference of wares. With these exceptions no sequence has been obtained. However, these examples could not govern the cultural sequence of all the sites in the region, nor could the sherds found therein offer sufficient data whereby all cultural relations could be determined.

The problem, therefore, becomes largely dependent upon the analysis and interpretation of the typology of objects buried with the dead, of mound structures, and of conditions occurring within them. If sufficient homogeneity of culture traits exists within the region to permit the whole to be designated a culture area, then analytic comparison with traits of contiguous areas may be made. Elements common to both may be found, indicating the occurrence of intertribal contact. Conclusions with respect to interareal development and relations may then be drawn.

As mentioned above, several of the museums in the United States possess collections of antiquities from northwestern Chihuahua, the specific centers of origin of which are unknown. Therefore, a study of Chihuahua pottery and archaeological objects of museum collections of known origin was made by me in 1927 and 1928. During the summers of 1928 and 1929 I conducted field expeditions into the region, exploration and excavation being carried on in various localities. The following data for individual cen-

[2] Schmidt, 279.

ters in the district were thus obtained both in museums from collections of known origin and in the field.

San Diego (Lumholtz Collection)

San Diego is situated 20 miles south of Old Casas Grandes near the Rio Casas Grandes (see fig. 1). Lumholtz explored this region in the early nineties,[3] excavated mounds, and secured pottery now in the American Museum of Natural History, from which collection the data in table 1 were obtained:

Table 1. Vessels of the Lumholtz San Diego Collection

Pottery types	*Shapes*	*Decoration*	*No. pieces*	*Per cent*
Polychrome, red-and-black-on-buff	Effigy-vessels, ollas, small bowls	Paneling, life designs in plumed serpent and parrot, opposed step, leaf design, scrolls, key, bent triangle, fine line work, good finish.	72	21
Red-and-black, white slip	Same as above	Same as above, but absence of life designs. Execution of designs and general technique is rather coarse.	35	10
Red-and-black-on-brown	Same as above	Same as above, but no life designs, execution generally poor.	11	3
Dark brown-on-gray	Ollas	Same as above, a few life designs, execution generally poor.	9	3
Black-on-red	Effigies, ollas, bowls	Same as above, life designs on 1 piece only, execution poor.	8	2
Polished red ware	Effigies, ollas, bowls		7	2
Red incised	Small ollas	Diagonal and parallel incisions, rows of holes.	20	6
Unpolished black	Large ollas	Incisions in lines on body.	4	1
Polished black ware	Effigies, ollas, bowls		123	36
Plain buff ware	Small ollas		54	16
Corrugated	Sherds only		—	—
			343	100

[3] Lumholtz, 1: 93.

Old Casas Grandes

"Old Casas Grandes" designates the site of the great ruins of adobe from which the present village obtains its name. These structures when occupied probably stood at least three stories in height.[4] A fine quality of pottery has been obtained from this vicinity, but few specimens in the museums are definitely classified as to point of origin. Lumholtz seems to have secured only five specimens from this site, which are now in the American Museum of Natural History. They agree in type, shape, and decoration with the San Diego ware. A random selection of surface sherds picked up by me in the vicinity of the great ruins showed:

Table 2. Surface Sherds from Old Casas Grandes

Pottery types	*Decoration*	*No. sherds*	*Percent*
Polychrome, red-and-black-on-buff	Panel, designs in agreement with those of San Diego ware.	11	24
Black-on-red	Straight broad lines.	4	9
Polished red ware		8	18
Red incised	Parallel and diagonal lines.	7	16
Polished black ware		6	13
Plain buff ware		6	13
Corrugated		3	7
		45	100

Pierson

Pierson is located about 12 miles south of San Diego on the Rio Casas Grandes. A small number of sherds picked up near mounds showed that pottery types and decoration agree with those of San Diego and Casas Grandes.

Colonia Dublan

Colonia Dublan is situated 5 miles north of Old Casas Grandes. A random collection of sherds picked up in the vicinity of mounds showed:

Table 3. Surface Sherds from Colonia Dublan

Pottery types	*Decoration*
Polychrome, red-and-black-on-buff	Panel, triangles, step designs, fine execution.

[4] Kidder, I, 115.

Black-on-gray	Triangles, checkerboard design.
Black glaze-on-yellow	Triangles.
Polished red ware	
Red incised	Parallel lines.
Polished black ware	
Plain buff ware[5]	

Cave Valley (Lumholtz Collection)

Cave valley is situated about 20 miles west of San Diego in the Sierra Madre. Lumholtz secured sherds from mounds in the vicinity[6] which are now in the American Museum of Natural History. The data in table 4 were taken from this collection:

Table 4. Sherds from the Lumholtz Cave Valley Collection

Pottery types	*Shapes*	*Decoration*
Polychrome, red-and-black-on-buff	Human effigies, ollas[7]	Panel, typical valley designs, but of poorer execution.
Polychrome, red-and-black-on-gray	Ollas	Panel, typical valley designs, poor execution.
Buff ware	Ollas, lip handles	Incised necks, diagonal incised lines on body, or no decoration.
Unpolished black ware	Ollas	Diagonal incised lines on body, or no decoration.
Corrugated ware	Large ollas[8]	

Corralitos

Corralitos is situated on the Rio Casas Grandes, 15 miles north of Colonia Dublan. A refuse deposit just east of a large mound, 2 miles southwest of the Corralitos ranch house, was located in the summer of 1929. This was a small mound composed of sherds and loose earth, having a height of 1 foot above the ground surface. It proved to be the apex of a deposit of sherds which the former inhabitants of the near-by ruins had thrown into a pit. The diameter of the deposit at ground surface was 9 feet. Trenches were dug on the east and west sides to determine its approximate depth and direction beneath the surface. Four strata of 1 foot each were cut. The section above normal ground surface was considered, since it represented the

[5] The small number of sherds found here does not admit of percentage tabulation.

[6] Lumholtz, 1: 80.

[7] The sherds are large and vessel shapes can be ascertained from them.

[8] No attempt is made to give percentages of wares from a museum collection of sherds.

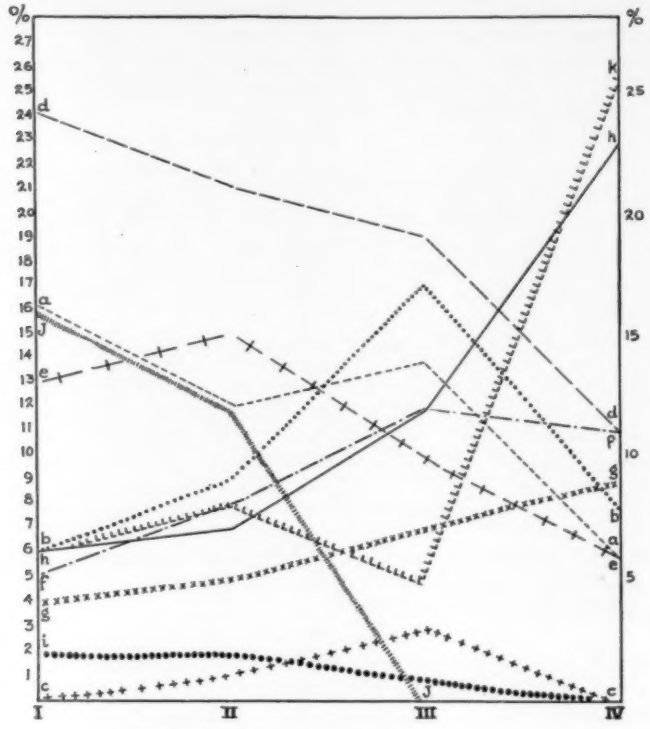

FIG. 2. Distribution of sherds at Corralitos

upper portion of the deposit, but sherds found on the actual mound surface were ignored. The statistics for this site are given in table 5. The column numbered 1 represents the top stratum:

TABLE 5. SHERDS FROM THE CORRALITOS REFUSE DEPOSIT

	No. of sherds				*Total*	*Percentages*				*Total*
Strata no.:	1	2	3	4		1	2	3	4	
Red-and-black-on-buff	81	83	35	13	212	16	12	14	6	13
Red and black, white slip	31	62	43	16	152	6	9	17	8	9
Black-on-white	7				7	1	x	x	x	x
Black-on-red		4	7		11	x	1	3	x	1
Black-on-orange	1		1		2	x	x	x	x	x
Polished red ware	124	144	48	22	338	24	21	19	11	20
Red incised	66	101	26	12	205	13	15	10	6	12
Polished black ware	25	51	29	22	127	5	8	12	11	8
Black incised	21	36	18	18	93	4	5	7	9	6
Plain buff ware	34	45	30	48	157	6	7	12	23	10
Buff incised	10	12	2		24	2	2	1	x	2
Polished buff ware	85	80			165	16	12	x	x	10
Plain red ware	30	52	11	55	148	6	8	5	26	9
Middle Gila polychrome		2	1		3	x	x	x	x	x
Black-on-red (Central Rio Grande)	4	1			5	1	x	x	x	x
	519	673	251	206	1,649	100	100	100	100	100

The foregoing data show:

(1) That all of the principal pottery types were known at this site.

(2) That all types had been in use contemporaneously for an unknown period of time.

(3) That a decline in the polychrome red-and-black-on-buff is indicated in the lower strata.

(4) That a small increase in the red-and-black-on-white-slip is indicated in the lower strata.

(5) That the black wares show an increase in the lower strata.

(6) That the plain buff ware shows an increase in the lower strata.

(7) That the Middle Gila polychrome ware was contemporaneou with Chihuahua wares.

(8) That Central Rio Grande black-on-red ware was contemporaneous with the later phase of the Chihuahua culture.

Ramos

Ramos is located 14 miles west of Corralitos near natural springs. A study of pottery and archaeological objects of this locality was made in the spring of 1928 at the Peabody Museum, Harvard University. During the summer of the same year collections in Chihuahua were studied. Substantial evidence was afforded that the pottery types, shapes, decoration, and technique were in close agreement with those of sites along the Rio Casas Grandes, but vessels of very fine texture and finish such as those of Old Casas Grandes and San Diego as well as plumed serpent painted designs were lacking. Effigies exhibited a greater variety of forms than those of other sites.

Newman's Ranch, New Mexico

Newman's ranch is situated 35 miles northeast of El Paso, Texas. A random selection of surface sherds picked up in the vicinity of exposed adobe ruins yielded:

Table 6. Surface Sherds from Newman's Ranch, New Mexico

Pottery types	*No. sherds*	*Percent*
Black-on-white on interior of large bowls	17	33
Red-on-orange (Mimbres)	5	10
Black-on-red (Central Rio Grande)	6	12
Black-on-white on exterior or ollas	10	20
Polychrome red-and-black-on-buff, coarse execution (Chihuahua)	5	10
Red incised (Chihuahua)	8	15
	51	100

Dry Lake, New Mexico

Dry lake is situated 50 miles northeast of El Paso, Texas. A random selection of surface sherds picked up in the vicinity of exposed adobe ruins yielded:

Table 7. Surface Sherds from Dry Lake, New Mexico

Pottery types	*No. sherds*	*Percent*
Black-on-white on interior of large bowls	3	6
Red-on-orange (Mimbres)	3	6
Black-on-red (Central Rio Grande)	7	14
Black-on-white on exterior of ollas	3	6
Plain-polished-black-exterior, buff-interior	4	8

Polychrome red-and-black-on-buff, coarse execution (Chihuahua)	26	54
Corrugated ware	3	6
	49	100

BABICORA

A break of 50 miles intervenes between Pierson, the site of the southernmost valley mounds, and the northernmost ruins in the Babicora district. The latter begin at Las Varas and extend southward intermittently for an unknown distance. They are smaller than the mounds in the north.

During the summers of 1928 and 1929 three mounds were entirely excavated by myself and assistants and four others were partially excavated. Significant results of this work were found in mound no. 3 (see fig. 3).

Mound no. 3 lies 1 mile south of Las Varas. This proved to be a six room structure having two well-defined floors. The upper floor had been plastered smooth and portions of it were blackened from fires. The lower ranged from 14 to 20 inches below, varying in different rooms. The hardened surface, a fireplace, and the positions of the walls identified the older floor. Broken pottery was found in three of the rooms of the lower floor as well as in three of the upper.

TABLE 8. SHERDS FROM MOUND NO. 3, BABICORA DISTRICT

Pottery types	*Decoration*	*No. sherds*	*Percent*
	Upper Floors		
Polychrome red-and-black-on-buff	Thick lines, triangles, scrolls	14	20
Red-on-black	Lines coarsely executed	9	13
Polished red ware	(Good finish)	10	14
Polished black ware	(Fair finish)	8	11
Plain buff ware		26	37
Corrugated		4	5
		71	100
	Lower Floors		
Red-on-black	Thick lines only	3	8
Polished red ware	(Good finish)	6	17
Polished black ware	(Fair finish)	6	17
Plain buff ware		19	53
Corrugated		2	5
		36	100

The above data indicate that there were two successive occupancies of the house, and that the later occupants were those who produced the polychrome red-and-black-on-buff ware, since none of this kind of pottery occurred on lower floors.

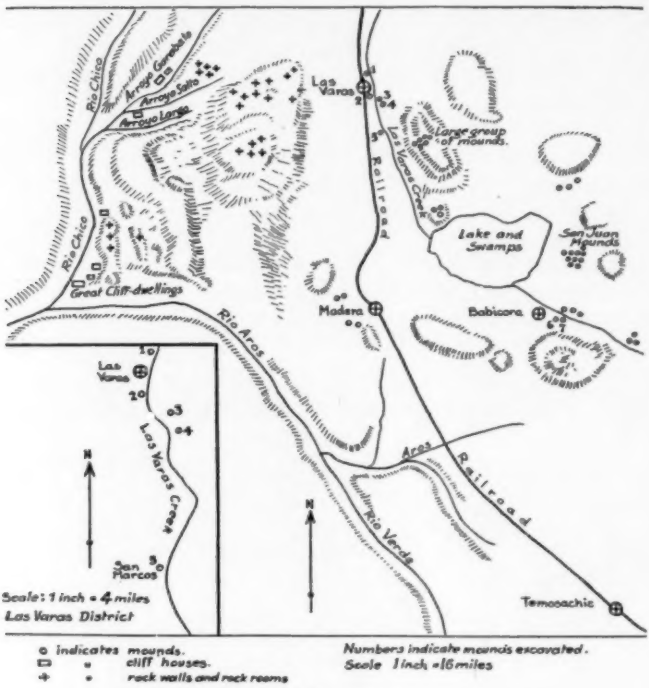

FIG. 3. Babicora district.

Under a room of the upper floor a burial was found. The top of the burial was only 2 inches beneath the floor surface. Ordinary burials are 2 feet or more from floor surface to skull. This indicates that the later inhabitants of the house had difficulty in penetrating the hardened lower surface; hence, a burial of minimum depth became necessary.

In mound no. 2 two less well-defined floors were in evidence with skeletal remains between them. Pottery types on upper and lower floors agreed with

those found on the corresponding levels in mound no. 3 except that black-on-red sherds occurred on upper floors in addition to those listed.

Other Babicora Sites

At San Marcos, 5 miles south of Las Varas, excavation of five rooms in a large mound yielded all the types of pottery found in mound no. 3 with the addition of black-on-red, red ware and black ware in incised technique, and red-and-black-on-white-slip ware.

Five whole ollas placed with burials beneath the floors were obtained at this site:

Table 9. Vessels obtained from the San Marcos Mound, Babicora District

Pottery types	*Shapes*	*Decoration*
Polychrome, red-and-black-on-buff	Olla, flaring rim, thick walls, rounded body.	Parallel, alternating, wide lines, poor execution.
Black-on-red	Olla, straight rim, rounded body, lug handles at rim.	Black triangles in large diamond-shaped figure, good polish, lines thick and poorly executed.
Polished red ware	Olla, straight rim, lug handles, rounded body.	Fair polish.
Red incised	Olla, small flare to rim, lug handles, rounded body.	Parallel rows of holes gauged with end of stick.
Polished black ware	Bowl.	Fair polish.

Elsewhere on Babicora plains mounds were excavated which yielded pottery types in general agreement with those already outlined. Human and animal head effigies in the same style as those of San Diego were found.

Although the pottery types of Babicora plains are undoubtedly the same as those of Casas Grandes valley, the nature and execution of designs and the technique exhibited in the shaping of vessels are inferior to those of the north. Designs characteristic of valley sites, such as painted parrot heads, single spirals, and fine-line paneling, are absent. The leaf-like element (p. 349) occurs rarely. In place of these, interlocked triangles, three-prong, and large step-figures predominate. Some of the best decorative work appears in the black-on-polished-red. On the other hand, the polished red and polished black ware appear to have been of a quality nearly equal to that of the valley points. Incised red ware and black ware were principal pottery types as proved by the abundance of surface sherds.

Temosachic

Temosachic is situated about 60 miles south of Las Varas. A study of pottery from this locality was made at the Southwest Museum, Los Angeles, from which collection the following data were obtained:

Table 10. Vessels from Temosachic in the Southwest Museum

Pottery types	*Shapes*	*Decoration*
Polychrome red-and-black-on-buff[9]	Human and animal effigies, ollas	Panel and typical Casas Grandes valley designs.
Black-on-red	Small ollas	Geometric designs typical of Casas Grandes valley black-on-red.
Polished red ware	Small ollas	
Red incised	Small ollas	Horizontal and diagonal incisions.
Polished black ware[10]	Small ollas	

Summary of Pottery Types

In the foregoing analysis an attempt has been made to locate the extent of this culture from the distribution of pottery types. The sites investigated in southeastern New Mexico are marginal and evidently represent the junction of three archaeological areas: those of Casas Grandes, the Mimbres, and the Central Rio Grande. Bandelier states that there are mounds at Janos and Ascension,[11] but I have seen no pottery from those ruins.

An examination of the data shows agreement in types, shapes, and designs of the pottery of Casas Grandes valley sites. Comparison of unbroken decorated vessels shows a high degree of similiarity in shape, design, and technique even though they are from different localities. The same may be said of shapes and technique in undecorated ware. Consequently evidence regarding the uniformity of pottery in the valley centers is reasonably conclusive.

As mentioned already, the types of pottery of Babicora plains correspond with those of Casas Grandes valley, and effigy vessels of the same style as those found at valley sites are present. Nevertheless the differences in olla shapes and in the nature and finishing quality of decorative designs on the polychrome ware differentiates the Babicora culture from that on the Rio Casas Grandes.

[9] The specimens studied were all whole vessels. The quality of workmanship in both shapes and designs was superior to that of Babicora wares.

[10] The number of vessels was small, therefore no percentages are given.

[11] Bandelier, 536.

According to Mr. Amsden the culture represented in the Babicora district is older than that to the north.[12] This, then, may account to some extent for the difference in the polychrome type. Moreover, its geographical position, without doubt, would to some extent prevent an influx of traits from Casas Grandes valley, hence local patterns persisted.

The distribution of the culture and relative homogeneity of pottery types have thus been determined both in the north and south. The marked differentiation of wares from those of contiguous areas, more specifically from subareas of the North American Southwest, warrants us in defining this as a culture area whose nucleus was Casas Grandes, with San Diego and Ramos as important centers. The extension of the area into the Babicora region can be made only by recognizing certain cultural differences.

Since the pottery from the known sites of the Casas Grandes valley is homogeneous in form, technique, and design, museum collections of unknown provenience were examined. These collections have a certain value in that, according to Mexicans who had secured such material from the mounds and sold it, they were all obtained within a radius of thirty miles from the ruins of Casas Grandes.

The analytic method previously outlined was applied to all museum collections of pottery of this culture henceforth designated as the Casas Grandes culture. Traits common to the latter area and those contiguous to it were analyzed and relations between them determined. The determination of cultural relations to the south was made by a comparison of analogous traits existing in Chihuahua and the nearest centers in Mexico. These centers are, Chalchihuites in northern Zacatecas, La Quemada and Totoate in northern Jalisco, and they range from 400 to 600 miles in distance from Casas Grandes.

Exposition and Interpretation of the Typology of Objects

A detailed description of the various features of Casas Grandes pottery has been published by Dr. Kidder.[13] The stylistic peculiarities of the pottery will be treated in detail here for they furnish clues to aspects of the problem which were formerly obscure. The following sections deal with pottery shapes, designs, and technique, each of which has importance in the elucidation of the general problem.

Shapes of Pottery and Other Objects

Effigy Vessels

Table 11 shows the type frequencies of vessel shapes. The data were

[12] Amsden, 48.

[13] Kidder, I, 253.

taken from the Chihuahua collection of the State Museum of New Mexico, Santa Fe, New Mexico.

TABLE 11. VESSEL SHAPES IN THE STATE MUSEUM OF NEW MEXICO'S CHIHUAHUA COLLECTION

	Number of Specimens				*Percentages*			
Pottery types	*Effigies*	*Ollas*	*Bowls*	*Miscellaneous*	*Effigies*	*Ollas*	*Bowls*	*Miscellaneous*
Fine polychrome[14]	14	64	14	16	4	19	4	5
Coarse polychrome[15]	27	84	13		8	25	4	
Black-on-red	1	11				3		
Polished red ware	6	10	3	5	2	3	1	1
Red incised		10				3		
Polished black ware		25	28	5		8	8	1
Plain buff ware	3				1			
	51	204	58	26 (=339)	15	61	17	7 (=100)

TABLE 12. ANALYSIS OF FIGURES ON EFFIGIES (noted in table 11)

	Number of Specimens				*Percentages*			
Pottery types	*Human*	*Animal*	*Bird*	*Fish*	*Human*	*Animal*	*Bird*	*Fish*
Fine polychrome	6	3	5		12	6	10	
Coarse polychrome	9	7	7	4	16	14	14	8
Black-on-red	1				2			
Polished red ware	2	2		2	4	4		4
Plain buff ware	3				6			
	21	12	12	6 (=51)	40	24	24	12 (=100)

Effigy vessels are generally foreign to the pottery of the Southwest. Isolated specimens and a small number of effigy sherds are known from the San Juan and central Gila areas.

There are four types of human effigies: (1) True effigies in which the entire form of the vessel portrays human figures, often in a sitting position

[14] Fine polychrome ware includes red-and-black-on-buff and vessels of related types, characterized by fine line work and superior finish.

[15] Coarse polychrome ware includes red-and-black-on-light-colored-slip and vessels of related types, characterized by generally coarse execution of designs and relatively inferior finish.

(fig. 4*a*, U.S.N.M.);[16] (2) those in which one side of the neck is extended above the aperture to represent a human head (fig. 4*b*, S.M.N.M.); (3) those with human faces or features modeled on the sides of vessels (fig. 4*c*, A.M.N.H.); (4) jars with body-parts protruding from the sides (fig. 4*d*, U.S.N.M.).

FIG. 4. Effigy vessels. *a*, figure modeled on entire vessel; *b*, face modeled on one side of vessel neck, which is extended above opening; *c*, face modeled on sides of vessel; *d*, body parts protruding from sides of vessel.

The type frequencies are as follows:

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[16] This means that fig. 4*a* in this paper was copied from a specimen in the United States National Museum. Abbreviations for the other museums from which specimen data were obtained are: American Museum of Natural History, A.M.N.H.; Peabody Museum, Harvard; P.M.; State Museum of New Mexico, S.M.N.M.

TABLE 13. TYPES OF HUMAN EFFIGIES IN THE STATE MUSEUM OF NEW MEXICO'S CHIHUAHUA COLLECTION

Pottery types	Number of Specimens				Percentages			
	True effigies	Raised neck	Faces on sides	Protruding parts	True effigies	Raised neck	Faces on sides	Protruding parts
Fine polychrome	1	3	1	1	5	14	5	5
Coarse polychrome	1	3	3	2	5	14	14	9
Black-on-red		1				5		
Polished red ware		1		1		5		5
Plain buff ware		2		1		9		5
	2	10	4	5 (=21)	10	47	19	24 (=100)

Effigy vessels appear in the middle (or Toltecan) period of the Valley of Mexico.[17] They have a wide distribution in certain Mexican cultures, the chronological relationships of which have not yet been fully determined. In collections from Tepic, Nayarit, and northern Jalisco, which are in the Museo Nacional, Mexico City, and in the American Museum of Natural History, effigies and figurines of clay representing men and women in sitting postures are numerous. Some take the form of a person holding a bowl, others represent women holding infants. Effigies of the Casas Grandes culture having these shapes are in the United States National Museum, the Heye Museum, and the Royal Ontario Museum. Although the specimens from Mexico farther south have a finer finish and detail, the relationships of form and technique to Casas Grandes specimens are very marked.

Effigies of the second type have their origin in the Chapala-Guadalajara district of northern Jalisco. Specimens from this region are exhibited in the Field Museum, and the Museo Nacional, Mexico City. They are of buff ware having a red slip, with the neck of the vessel extended and shaped to represent a human face. The eyes are buttons of clay, the nose is prominent and well-defined, the mouth a slit. A number of these bear a distinct likeness both in general technique and facial portrayal to specimens of the Casas Grandes culture.

Effigies of the third type occur in nearly every subarea of Mexico. Specimens from the Casas Grandes region are similar to Mexican examples in facial features. The nose is prominent, the mouth is well-formed, and often teeth are exposed. The chin is emphatic, and the expression animated.

[17] Seler, tafel 67, 70, 77.

Examples of this type from many parts of Mexico are to be seen in the Museo Nacional, Mexico City.

Effigies of the fourth class are shaped in such manner that a small olla represents a reclining figure. The head protrudes from one side of the vessel, the legs and feet from the other. The arms are modeled on the sides of the vessel. The head features and limbs are usually well formed. The attitude of these figures is very unusual in ceramic arts. Similar effigies are found elsewhere in very small numbers only in the Mississippi valley where they must have been introduced in some way from central Mexico. Effigies of this type apparently represent concepts of Chacmool, the reclining god of central Mexico. These concepts were brought into the Casas Grandes region and there interpreted by the native artists. Examples of Chacmool carved in stone have been found at Chichen Itza, at Cempoalan in Vera Cruz, at Texcoco in the Valley of Mexico, and at Jhuatzio in Michoacan.[18]

FIG. 5. Macaw head effigy vessel.

Animals, bird, and fish bodies occur in the four types of effigies mentioned above. True effigies are represented by the mountain goat with legs upon which the whole vessel stands. An opening in the back of the animal permits use of the cavity within. Heads are so well executed that there is no doubt as to what the figure is intended to represent. The badger, macaw, and owl are common subjects for effigies of the raised neck type. The motives for vessels of the modeled-side kind are often coiled snakes, frogs, and lizards raised in relief. All of the faunal varieties portrayed in effigies inhabit this region including the macaw, which is a native of the Sierra Madre (fig. 5, U.S.N.M.).

Miscellaneous Vessels and Objects

Besides effigies, a variety of miscellaneous shapes is found in the major-

[18] Spinden, II.

ity of Casas Grandes collections. Raised bowls with flat bases (fig. 6*a*, U.S. N.M.) occur in small percentage. They are usually of polished red or polished black ware and agree in shape with Mexican vessels of a similar class.

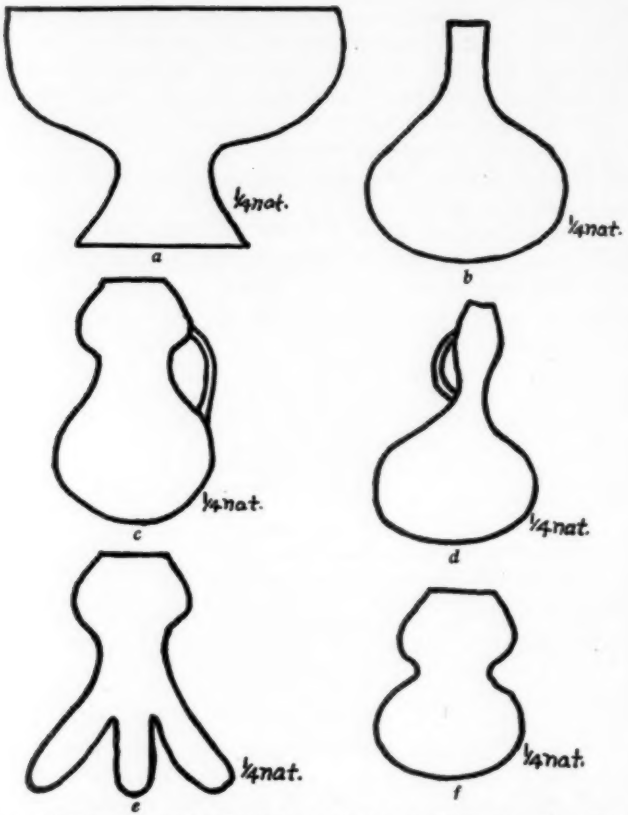


FIG. 6. Miscellaneous vessels and objects. *a*, raised bowl with flat base; *b*, small finely-made bottle; *c*, *f*, double-necked vessels; *d*, bottle; *e*, three-legged, cup-like object.

Vessels of this shape are not found in the Southwest. In fine polychrome ware there are small finely-made bottles (fig. 6*b*, U.S.N.M.), with or without handles; in polished black ware, three-legged cup-like objects (fig. 6*e*,

S.M.N.M.); and in polished red ware, two ollas joined by a handle and a connection at the bases, double-necked vessels (fig. 6*c*, *f*, S.M.N.M.), and bottles (fig. 6*d*, S.M.N.M.). Small bottles are apparently of great rarity in the Southwest,[19] but are frequently encountered in districts of central Mexico.

Small figurines in pottery and carved stone occur rarely. There are examples of both in the collection of Mrs. E. C. Houghton of El Paso, Texas. They take the form of human heads, 1 to 2 inches in height, and are well executed. Spindle whorls are of polished black ware with incised decoration or of plain buff ware.

The typical olla (fig. 7*a*) is small, not over 8 inches in height, with straight sloping sides and very little extension of the neck, widest diameter two thirds of the distance from the orifice. The polished black and red ware jars (fig. 7*b*, *c*) are of somewhat similar shape, but smaller and squattier,

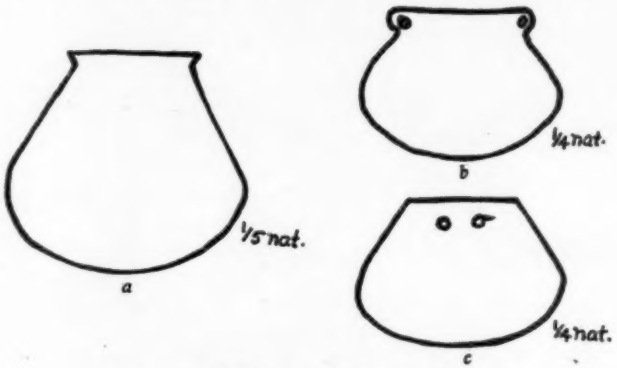


FIG. 7. Vessel shapes. *a*, typical olla; *b*, *c*, jars.

and they often have lug handles. Probably a local pattern has persisted here with some preference for the small, polished black and red ware of the Mexican forms rather than for the bulging Southwestern styles. The stratigraphic data obtained at Corralitos confirm to some extent the point that local olla shapes had been of long standing, since pottery sherds found in the lowest stratum were identified with types of whole vessels having the above-mentioned shapes.

Carved stone images are relatively commonplace in the Casas Grandes

[19] Kidder, I, 255.

culture. They range from 1 to 2 feet in height and are of red or gray sandstone. The features consisting of eyes, mouth, nose, and ears, with a semblance of shoulders and arms, are in some specimens fairly executed, in others very crude, in still others almost obliterated with wear. Several have crowns or headdresses (P.M.). Such figures occur also in certain parts of the Southwest. An example without headdress from the Middle Gila region is figured by Fewkes.[20]

Metates with three or four legs occur in the vicinity of the great ruins at Casas Grandes. Elsewhere in the region they are without legs as in the Southwest. Legged metates suggest the Mexican type.

Decorative Designs on Pottery

Design Elements

Although in execution of designs and general technique Casas Grandes fine polychrome pottery probably surpasses many of the wares of the Southwest the elements used are very few, only nine design elements occurring on

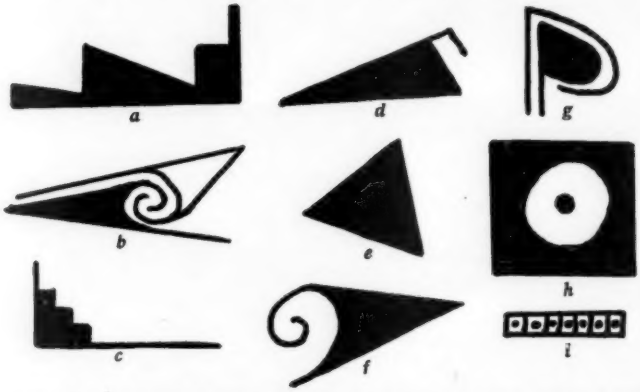


Fig. 8. Design elements. *a*, key designs; *b*, interlocked spirals; *c*, step designs; *d*, triangles having one side extended and bent; *e*, triangles; *f*, single spiral; *g*, leaf element; *h*, circle in negative drawing with dot inside; *i*, dot within a small square.

approximately 80 percent of the decorated vessels. (See fig. 8.) These are key designs, interlocked spirals, step designs, triangles having one side extended and bent, triangles, single spiral, leaf element, circle in negative drawing with dot inside, and dot within a small square.

[20] Fewkes, I, pl. 47.

Of these, the first four are undoubtedly Southwestern designs. The first three centered in the San Juan area, and the fourth is general throughout the Southwest with its center of dispersion undetermined. The simplicity of the triangle element prevents certainty of its origin. The single spiral and the leaf-like element will be dealt with separately in following sections. In the Southwest the circle in negative painting having a black dot inside centered in the San Juan region. Although it appears but rarely on pottery of intervening subareas, the prevalence of other San Juan designs on Casas Grandes pottery leads to the supposition that it also may represent an intrusion from the north. However, this design was of general occurrence on the pottery of Mexico from archaic times on through the several culture epochs,[21] and continues to be a prominent figure in the decoration of the modern wares. The dot within a small square in the ground-color of the vessel is of general distribution over the Southwest, therefore this element may be regarded as having come from the north into the Casas Grandes culture.

Local Composition of Southwestern Design Elements

The principle of opposition in geometric decorative elements is a conspicuous feature of Casas Grandes pottery, without doubt disseminated from the Southwest where it is universal. Traits such as spirals having no opposing spirals to interlock with them, or step elements opposed to each other but drawn on the same basing line, are rarely to be seen on Southwestern pottery. On Casas Grandes pottery both traits occur as modifications of the interlocked-spiral and opposed-step designs of the Southwest. An examination into the methods of line-paneling is required in order to determine the governing processes here.

Figure 9 represents the decoration on one-half of a Casas Grandes olla (E. C. Houghton collection, El Paso, Texas). The other half is the same except that the color scheme is reversed in the elements.

It will be observed that the opposed elements lie on different basing lines and that there are two sets of four-each introductory positions of lines functioning as their stems. In the drawing these lines are given the same numbers as the elements of which they are the stems. Thus, line no. 1 at the right top is the stem of element no. 1 top, line no. 2 right top the stem of element no. 2 left, line no. 3 upper center the stem of element no. 3 top, line no. 4 the stem of element no. 4 left, etc. There are, therefore, eight stem lines and eight elements. The vertical columns on the extreme left and right are decorative devices separating the two paneled fields of the vessel. They are narrow, permitting ample space for the eight stem lines.

[21] Franz Boas and Manuel Gamio, pls. 27, 28, 47, 58.

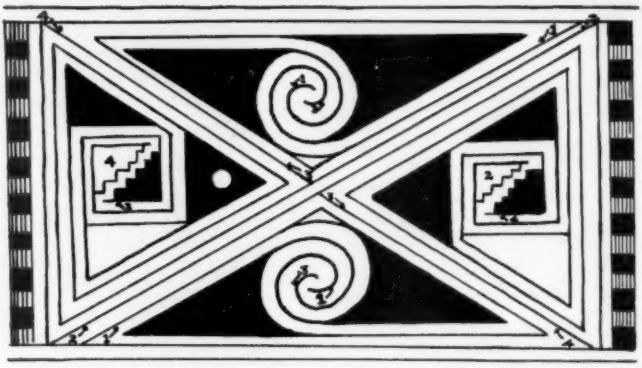


FIG. 9. Decoration on one-half of a Casas Grandes olla, E. C. Houghton collection.

Figure 10 represents the decoration on one-half of another olla (S.M.N. M.), the opposite half of which is the same except that the color scheme is reversed in the elements.

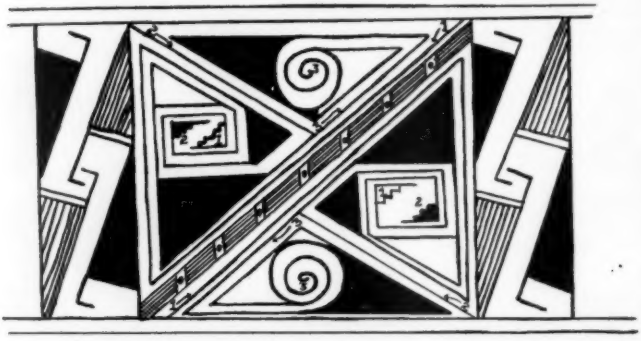


FIG. 10. Decoration on one-half of another Casas Grandes olla in the State Museum of New Mexico.

In this figure the vertical decorative columns at the extreme right and left separating the two panels are much wider than those in figure 9. In addition there is a decorative device running diagonally through the center

of the paneled field. This device occupies considerable space and precludes the introduction of more than three functional stem lines on each side of the diagonal, or a total of six. Thus, there are six introductory lines which must serve as stems for all of the decorative elements in the field. This gave rise to a composition of the design elements, since to execute double spirals, two additional stem lines would have to be introduced for which there was no space. This resulted in the single spiral, formed by a lowering of one of the opposed triangles to the basing line of the other triangle, and a continuation and extension of their curved inner sides. This trait is foreign to Southwestern decoration, but occurs frequently on Casas Grandes fine polychrome ware.[22]

In like manner it can be shown that opposed-step designs based on one stem (fig. 11) instead of two, as in the Southwest, follow processes similar to those outlined for the single spiral.

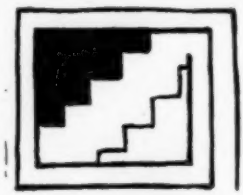


FIG. 11. The opposed-step design based on one stem.

In general, then, where there has been a narrowing or restriction of the paneled field or the decorative conditions were such that one stem line could not be introduced for each separate element there has been a composition of designs. The single spiral and opposed elements on the same stem are, therefore, compositions of borrowed traits developed locally through amplification of artistic motives.

The Leaf Element

Characteristic of the pottery of the Casas Grandes area is the leaf design, consisting of a black, or occasionally red, leaf-shaped figure on one side of a stalk. The leaf is usually accompanied by a line or hook which extends from behind and then makes a broad curve in front of the leaf-face (fig. 12).

[22] All-over double spiral designs in this type of pottery are rare, but occur frequently on the coarse polychrome ware.

Decoration on the pottery of Mexico farther south exhibits no design similar to the leaf element. Furthermore, no like design is found on South-

FIG. 12. The leaf design.

western pottery. However, certain Southwestern interlocked spirals bear a superficial likeness to it. The best examples of such spirals are on the interior of black-on-white bowls from Aztec ruin, New Mexico (fig. 13, A.M.

FIG. 13. The spiral design.

N.H.). An examination of the leaf design on all types of Casas Grandes pottery shows that in many cases where the execution of design was inferior and line paneling was less definite, the leaf-and-hook design partakes in high degree of the characteristics of the Southwestern interlocked spirals just mentioned.

It can easily be seen how the principle of opposition embodied in the Southwestern spirals may give rise to such a design as the leaf-and-hook when the influence of precise paneling serves to incorporate it into the specific areal pattern.

Therefore the conclusion is, that the leaf-and-hook design had its origin in (opposed) elements disseminated from the Southwest. It was modified locally through the influence of paneling and possibly symbolic association and it became an element which is duplicated in no part of the region to the north except in the Mimbres district, contiguous to Casas Grandes, where it was certainly an intrusion from the latter region.

The leaf-and-hook design occurs on about 34 percent of the Casas Grandes fine polychrome ollas as an independent element, as contrasted to its use in a functional capacity in some design combinations.

In the Mimbres area of the Southwest, where the pottery consisted of large bowls with realistic and geometric figures painted on the inside, the leaf-and-hook design in its fully developed form is present to the extent

FIG. 14. The Mimbres leaf-and-hook design.

of 3/4 of 1 percent. About four hundred Mimbres bowls were examined and three specimens possessing this element, conventionalized in the art pattern of the area, were observed (fig. 14, S.M.N.M.).

This indicates that contacts were established between the two areas and that the fine polychrome phase of the Casas Grandes culture was contemporaneous with that phase of the Mimbres culture which produced the Casas Grandes designs on the interior of large bowls. It also indicates that the influence in the production of the leaf element was directed from Casas Grandes to the Mimbres area.

The Upper Gila Spiral

A decorative design peculiar to the Upper Gila area, which is contiguous to the Mimbres region on the north, is found as an intrusive element on Casas Grandes pottery. It occurs on the black-on-white ware of the later full Pueblo period and its center seems to have been on the Rio Tularosa.

This design is composed of two elements—one in black, the other in hatching. These interlock to form a double spiral. Often there is a rectilinear design in hatching resting upon the upper curve of the hatched element (fig. 15, P. M.).

This combination may be taken as a complex, since its component parts are not generally used as separate elements. It is readily distinguished from any Casas Grandes design. It occurs on that class of Casas Grandes pottery designated in this paper as "coarse polychrome" ware, the classification of which has already been given (see footnote 15). This design complex is present on approximately 2 percent of the Casas Grandes coarse polychrome vessels. These vessels also possess local designs proving that they

FIG. 15. The Upper Gila spiral.

were not trade ware from the Tularosa but that this decorative complex was an intrusion which the Casas Grandes design painters used in conjunction with their own elements.

The excavations of Hodge near Hawikuh, New Mexico, show indirectly that the Upper Gila culture somewhat antedated that of Casas Grandes.[23] Therefore, the occurrence of the Upper Gila spiral on Casas Grandes coarse polychrome may indicate that this ware represents pottery of an earlier period of the Chihuahua culture. This conclusion is supported to a certain extent by the stratigraphic data obtained at Corralitos where red-and-black-on-white slip ware showed an increasing percentage over the polychrome red-and-black-on-buff types in the lower strata.

[23] Hodge, 31 and following.

Negative Painting, Formal Process

Different methods of negative painting as decoration on pottery were in use in western Mexico, in the Mimbres region of the Southwest, and in the Casas Grandes valley. A method especially common in Jalisco and Michoacan consisted in painting the desired design with wax or some perishable material, after which the entire vessel was covered with a permanent paint. When fired, the wax was consumed leaving the design in the ground color of the jar.[24] In the Mimbres region the outline of the figure was painted in black or some other color, making the design appear in white against a dark border. In the Casas Grandes area there were two methods: one in which formal motives in the local art pattern were combined with realistic impression; the other was similar to that used in the Mimbres area. It is

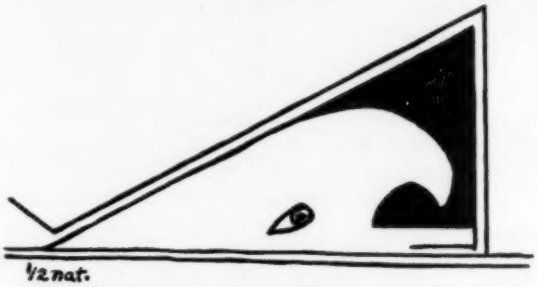


FIG. 16. The negative painting (formal process) design.

with the former that this section is concerned. The design effected by this method was usually painted in triangular spaces between panel lines, out of the central focus of the field (fig. 16, S.M.N.M.).

It will be observed that the construction of the design depends upon the presence of the small leaf element near the base. It is designated in this paper as the "macaw head" design because its outlines resemble, in a general way, profile outlines of the macaw effigy heads (see fig. 5). Also, certain variations of the painted design clearly show this to be the correct interpretation.

Table 14 shows the frequency of the macaw head design in relation to some other features of the pottery. The data were taken from the collection of the State Museum of New Mexico.

[24] Seler, 3: 95 and following.

TABLE 14. THE MACAW HEAD DESIGN ON VESSELS OF THE STATE MUSEUM OF NEW MEXICO'S CHIHUAHUA COLLECTION

Ware	*Vessel shapes*	*Total vessels of type*	*Vessels with paneling*	*Percentage of vessels with paneling*	*Vessels with macaw in negative painting*	*Percentage of vessels with macaw*
Fine polychrome	Effigies	14	11	12	5	5
Fine polychrome	Ollas	64	45	49	11	12
Fine polychrome	Bowls	14	7	8	2	2
		92	63	69	18	19
Coarse polychrome	Effigies	27				
Coarse polychrome	Ollas	84	26	21		
Coarse polychrome	Bowls	13	2	2		
		124	28	23		

Sixty-nine percent of the fine polychrome vessels are paneled, and 19 percent of the same ware possess the macaw head in negative painting. Turning to the coarse polychrome ware, the figures show that only 23 percent of the specimens are paneled, while the macaw head is entirely absent. Instead of the macaw head in triangular spaces, the leaf design and a section of its hook often occur.

FIG. 17. The leaf design in triangular spaces.

The leaf design was used on the coarse polychrome ware rather than one of the other decorative units for the reason that its shape naturally adapted itself to the space within the triangle, whereas the other elements would not fit into it.[25] This combination left a vacancy at the apex of the ground color triangle which was inconsistent with the general decorative pattern (fig. 17,

[25] It may be objected that the single spiral would fit in, but it may be recalled that the single spiral required two triangles in opposition to each other to execute it. Besides, the single spiral does not occur on coarse polychrome ware.

S.M.N.M.). By the addition of a black dot, a small circle, or an oval in this space, the whole figure assumed the likeness of a living being in the ground color of the field.

In the fine polychrome ware the leaf element in the macaw head design is diminished in size giving a more realistic interpretation to the whole, but the short section of the accompanying hook is not dispensed with. The stratigraphic data obtained at Corralitos and the occurrence of the Upper Gila spiral on coarse polychrome vessels suggest the chronological priority of that ware to the fine polychrome, thereby strengthening the conclusion advanced.

Negative Painting, Outline Process

A second method of negative painting was employed in which the outlines of realistic figures were drawn on a section of the vessel side; details were painted within the outline, and the whole design surrounded by black paint. The subjects are human beings and birds (fig. 18, S.M.N.M.).

FIG. 18. The negative painting (outline process) design.

In the human figures two significant points should be emphasized: first, the process by which they were made; secondly, the concepts embodied in their representation. Concerning the former it may be pointed out that the execution of such ornamentation exhibits a command of the art of outline drawing which must have required a long developmental period. These designs occur only on the fine polychrome ware. One specimen of coarse polychrome ware in the American Museum of Natural History has a positive painting of a human figure with elaborate headdress. This repre-

sentation is related to that in figure 18. With this exception there are no similar designs on Casas Grandes pottery other than the fine polychrome ware.

As to historic possibilities in connection with the Southwest, the human figures and birds in the outline process of negative painting produced by the Mimbres culture were in a style somewhat similar to those on some Casas Grandes vessels. Hence a relationship may have existed between the two cultures. At present it is not possible to determine whether the negative process originated in either of these areas. For in the Jalisco region negative drawing is also highly developed. On the other hand the headdress, appendages of wearing apparel, and skirt in figure 18 bear distinct resemblance to paraphernalia worn by Mexican divinities.[26] Although the Mexican drawings are not executed in negative technique, the entire complex shown in the Chihuahua figures strongly suggests mental impressions derived from the South. Furthermore, the negative process of portrayal is foreign to the Southwest. It seems justifiable, therefore, to infer an historical connection with Mexico. The peculiarities in the method of portrayal were doubtless local technical modifications.

The Plumed Serpent

The plumed serpent is depicted on about 2 percent of the fine polychrome ollas of the Casas Grandes culture. Although the various examples exhibit differences in details, the general contour and features are similar (fig. 19, A.M.N.H.). The method of execution was to draw the upper and

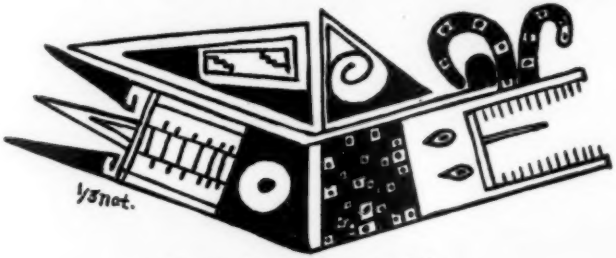


FIG. 19. The plumed serpent design.

lower bounding lines to form the sides of the figure, then, by the addition of decorative elements in common use on the pottery the distinguishing features were produced.

[26] T. W. Danzel, vol. 11, pls. 38, 41. Seler, vol. 5, pl. 11.

Thus, the plumes of the serpent are represented by a form which the hook accompanying the leaf element often takes. The jaws are portrayed by the comb device often seen on polychrome ware, the tongue by straight lines, the tail by triangles with bent sides. The eyes are of the same style as those of the painted macaw heads. The intermediate space is filled in with elements used on the decorated pottery. A zigzag direction of the body conforms to the pattern of certain pottery decoration where wide bands meander around the vessel.

Other painted realistic designs are not compositions of geometric elements but rather actual reproductions of the object. In animal effigies no distortions by unnatural additions to figures occur which might point to imaginative faculties on the part of the Casas Grandes artists.

The characteristics of these portrayals are strikingly in agreement with those of the plumed serpents of Mexico. This fact, and the integration of separate geometric elements into a rational whole, show almost indisputable evidence of affiliations with the South. Apparently, concepts disseminated from there were received into the Chihuahua culture and incorporated into the areal pattern.

This is an excellent example of the elaboration of geometric into realistic forms due to the contact of two cultures. On the other hand, the treatment of the plumed serpent may be a trait which persisted from an older art style of the area.

Pottery Technique

A Peculiar Technique in Red Ware

On some of the polished red ware vessels a certain method of decoration was employed in which pairs of deeply incised lines meander in a narrow band just above the greatest diameter. Between the pairs of lines a thick coating of black or red pigment was laid and afterward polished. The surrounding surfaces were left rough. This technique takes two forms: first, the lines remain parallel and zigzag around the vessel describing symmetrical courses; secondly, the lines remain parallel for a short distance, then expand to form geometric designs (fig. 20, S.M.N.M.).

Decoration by ordinary incised lines runs over the entire upper surfaces of ollas and the lines do not change direction and are not used in composition. Furthermore, black paint is not used with ordinary straight line or puncture incision. However, when black or red paint is used with line incision the two techniques are combined to form a continuous geometric unit.

A similar technique is employed on some of the jars of the Archaic culture of Mexico. Pairs of incised lines are arranged in continuous bands and

geometric figures. The spaces between the incisions are filled with black or red paint and the surrounding surfaces left rough. Sherds from Zacatenco and Ticoman showing this method of decoration are figured in the archaeological album edited by Professor Boas.[27] This technique is also to be seen on pottery vessels of the La Quemada-Totoate-Chalchihuites culture of Za-

FIG. 20. Incised lines design.

catecas and Jalisco. Examples of such vessels are to be found in the Museo Nacional, Mexico City, and the American Museum of Natural History. According to Spinden, the Jalisco and Zacatecan cultures have certain features which point toward relationship with the late epoch of the Toltecan period.[28] On the other hand, the decorative technique described above is foreign to the Southwest.

Contrasts in Local and Southwestern Wares

There are significant technical differences in the local pottery types and those of the Southwest. These differences are apparent in the incised wares, the polished red, and the polished black ware.

Incised ware is rare in the Southwest,[29] occurring consistently only in the Lower Salt region.[30] In the Casas Grandes area incised red ware and black ware are relatively common. The former is generally distributed over the entire region including marginal sites in New Mexico. Incised black ware is found in the Cave valley mounds and at Babicora. At Casas Grandes valley sites few sherds of this technique were observed on the surface, but the excavation at Corralitos indicates an increasing series in the lower strata, which may mean that it was supplanted by other types of pottery in the later period of the culture.

Polished red ware, found within the entire known area, was one of the principal pottery types. The quality and finish of vessels of this class were

[27] Boas and Gamio, pls. 39, 40, 41, 50.
[28] Spinden, II, 183.
[29] Holmes, 282.
[30] Schmidt, 288.

equally good in the several districts of the area including Babicora plains, Temosachic, and valley points. Polished black ware, comparable to that produced at Santa Clara today, is likewise widespread and of good quality and polish both in the north and the south.

In the Southwest, vessels of red ware having the quality and polish of the Casas Grandes specimens are not abundant. Pottery with polished black surfaces was made on the Middle Gila (Arizona), in the Socorro region of New Mexico, and at Pecos.[31] Of the examples of this ware, bowls from the Middle Gila region are red outside and polished black within. The Socorro specimens, in the shape of bowls, have a finely corrugated exterior and a polished black interior. At Pecos, pottery of this class was late and probably of historic date.[32]

Incision by holes, lines, and geometric figures had a very wide distribution on the pottery of Mexico farther south. It began in the Archaic period and continued through Toltecan and Aztecan times and was one of the characteristic forms of decoration on pottery of the La Quemada-Totoate-Chalchihuites culture of Zacatecas and Jalisco.[33] Polished red ware and black ware in the forms of ollas, effigies, and unusually shaped vessels were common in a large part of Mexico. The former was one of the principal pottery types of the Archaic[34] and subsequent Mexican cultures. The latter seems to date from Toltecan times.[35] Both types occur at sites in Zacatecas and Jalisco (Field Museum, and A.M.N.H.).

Another significant contrast between Southwestern and local classes of pottery is that black-on-white ware, characteristic of prehistoric cultures in the Southwest, is generally absent throughout the entire area under discussion.

The Mounds

Casas Grandes Valley

In this region mounds occur along both sides of the river from the northern extension of Casas Grandes valley to Pierson in the south. They average about 200 feet in length and 100 feet in width. They rise gradually from the normal ground surface and reach a height of from 5 to 7 feet. Mounds also occur at sites some distance from the river, as at Ramos and Galeana. In general, mounds are found where water was available, along creek beds or near natural springs.

[31] M. A. and A. V. Kidder, 337.
[32] *Ibid*, 338.
[33] Boas and Gamio, pls. 38, 39, 54, 59, 62, 65.
[34] *Ibid*, pls. 40, 50.
[35] Seler, vol. 5, pls. 54, 56, 57.

Bartlett,[36] Bandelier,[37] Blackiston,[38] and Lumholtz,[39] pioneer explorers in this region, have described the great ruins at Casas Grandes, making description unnecessary here.

My assistants and myself excavated in three large mounds in the Corralitos district in the summer of 1928. Walls having coatings of plaster were located, rooms exposed, and fireplaces cleaned out. Burials under corner walls were found. Doorways were rectangular in shape and door sills were about 1 foot above floors. In the floors of certain rooms there were small circular depressions having baked clay walls. These were for the reception of round-bottomed pottery vessels. Similar depressions were found at Dry lake, New Mexico, and on Babicora plains.

The walls of the structures were of adobe and averaged 1 foot 4 inches in thickness; their height ranged from a few inches to 6 feet. Sherds were found in all the rooms excavated. Significant features of the excavations at Corralitos were the absence of roof timbers and the presence of quantities of wood ashes in loose earth within the rooms.

Soldiers of the punitive expedition of 1916 against Francisco Villa pillaged nearly all mounds in the Corralitos district in a search for pottery. Because of this fact and because facilities for conducting excavations on mounds of such magnitude were not available, work was abandoned and continued on Babicora plains.

Babicora Plains

The northern part of the Babicora plains is drained by Las Varas creek which flows from the north into a shallow lake some 15 miles south of Las Varas ranch (see fig. 3). Along both sides of this creek there are mounds at irregular intervals. They are smaller than those of Casas Grandes valley ranging from 50 to 120 feet in length. The southern part of the plains is drained by Babicora creek which flows northwestward and empties into the same lake as does Las Varas creek. Mounds occur 8 or 10 miles southeast of the mouth of this stream. Elsewhere there are mounds along old watercourses and at San Juan ten large mounds form a group, giving the impression that a center is represented here. This conclusion seems justified in view of the large number of pottery types and the good quality of workmanship displayed in finds of surface sherds in this vicinity. The map shows sites at which excavations were made on Babicora plains. Some of the results obtained at mounds nos. 2 and 3 have already been given (see pp. 335,

[36] Bartlett, vol. 2, chap. 35.
[37] Bandelier, 543.
[38] Blackiston, I, 5: 142.
[39] Lumholtz, 1: 87.

336). Since the data for all of the mounds would occupy considerable space, two (numbered 4 and 5 on the map) have been selected to show representative features for this district.

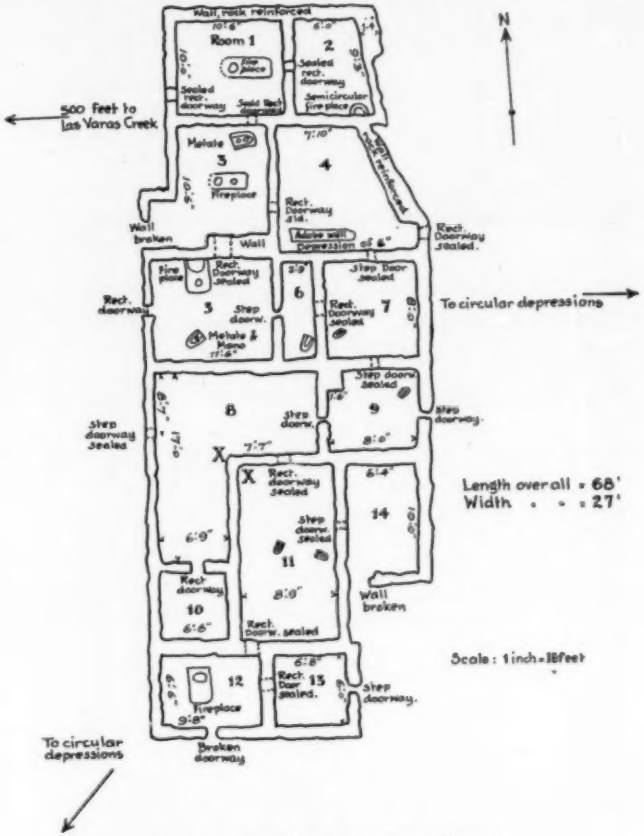


FIG. 21. Floor plan of house, mound no. 4.

Mound No. 4

This mound is situated 1½ miles south of Las Varas ranch house and 500 feet east of Las Varas creek. The original length of the mound at nor-

mal ground surface was 100 feet; its width 50 feet; its height at the center about 5 feet. Four Mexicans were employed in the excavation. Work was begun by trenching in from normal ground surface on three sides of the mound in an endeavor to locate the exterior walls. These were located and followed entirely around the structure (pl. 18*a*). The exterior doorways could then be seen and the positions of the rooms located.

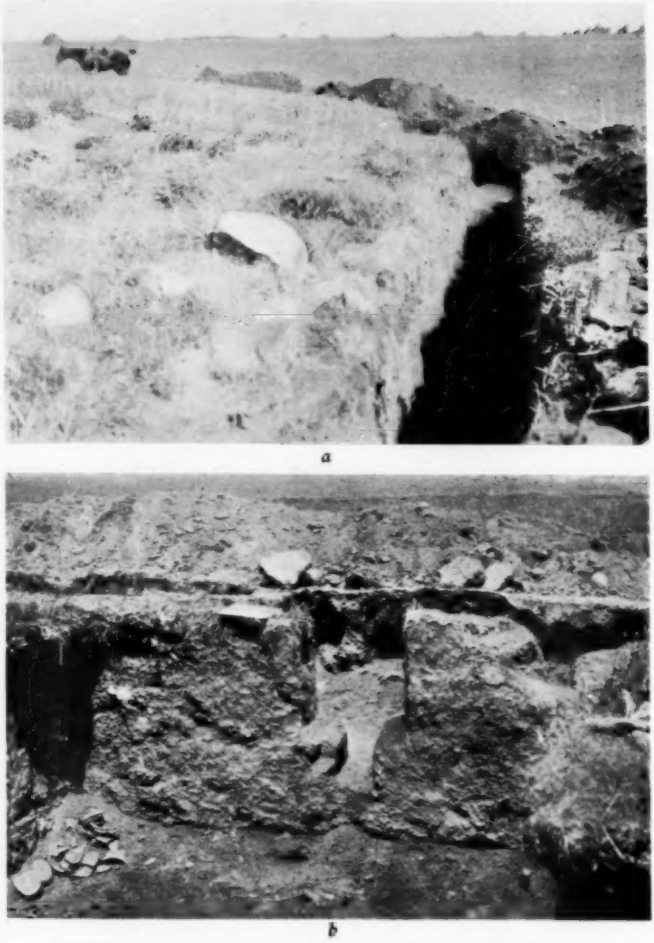
The height of exterior walls averaged 2 feet. North and east walls were reinforced with boulders. The average thickness of the walls was 1 foot. The mound was completely excavated two weeks after starting, records having been kept of the findings from day to day.

The structure within proved to be a fourteen-room dwelling having walls of adobe and well-defined doorways and fireplaces. The more important features are shown in figure 21. Conspicuous peculiarities within the mound house were: (1) the lack of plastering on walls except in room no. 5 where the north and east sides preserved one coating which was blackened on the outer side; (2) the large number of doorways sealed with adobe and rock; (3) the absence of roof beams or timbering of any kind. The maximum wall height was 3 feet 8 inches, with 8 inches of earth above this to the ground surface.

Doorways were of two kinds: (1) rectangular, the sills being from 10 to 18 inches above floors; (2) step-passage type, having a passage of six-inch width at the base and an abrupt widening a foot or so higher (pl. 18*b*). All of the walls were broken off below the lintels. Of the sealed doorways mentioned above, ten were rectangular and four step-passage type. The total number of step-passage doorways, both sealed and open, was eight.

There were three types of fireplaces: (1) Platforms of adobe raised 3 inches above the floors, each platform having a basin-like depression at one end. Often there were other smaller depressions, between the basin and the end of the platform (pl. 19*a*). (2) An adobe platform raised 3 inches above the floor and having a depression. The wall of the room was at one end of the fireplace and adobe stepped-blocks formed the sides of the basin (pl. 19*b*). (3) A semicircular construction of adobe erected against a wall; a depression between the rim and wall contained the fire.[40] The large depressions of all three types contained wood ashes. It seems clear that the adobe platforms of the first and second types were used to place materials in readiness for cooking, and the small depressions to hold round-bottomed vessels upright. There were five fireplaces in the entire structure, of which three were type no. 1, one type no. 2, and one type no. 3.

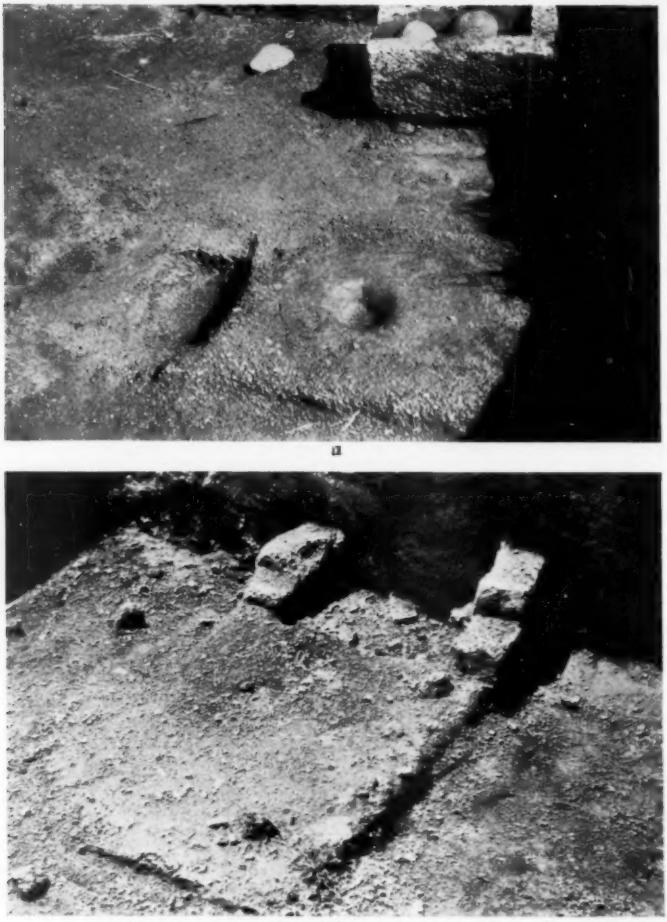
[40] See floor plan, room no. 2.



a

b

Mound no. 4. *a*, trench around exterior walls; *b*, step-passage doorway.



a

b

Mound no. 4. *a*, fireplace, type no. 1; *b*, fireplace, type no. 2.

Floors in rooms nos. 1, 2, 3, 4, 7, 9, were paved with flat stone flags with adobe mortar between them. A layer of adobe ½ inch in thickness covered them.

Table 15 lists the contents of the various rooms.

TABLE 15. ARCHAEOLOGICAL CONTENTS OF THE ROOMS IN MOUND NO. 4, BABICORA DISTRICT

Potsherds	*No. of sherds*	*Other objects*
Room 1		
Polychrome red-and-black-on-buff	3	Manos 2
Polished red ware	1	
Polished black ware	3	
Black cooking ware (light red interior)	7 (=14)	
Room 2		
Polychrome red-and-black-on-buff	3	
Plain buff ware	48 (=51)	
Room 3		
Black cooking ware (light red interior)	5	Manos 4
		Well-made metate 1
		Manos within metate 2
Room 4		
Red-and-black-on-brown (Interlocked spiral and bent triangle designs, coarse execution)	19	Mano 1
Incised red ware	1	Rounded hammerstones 4
Polished black ware	8	
Black cooking ware (light red interior)	12 (=40)	
Room 5		
None		Metate 1
		Mano 1
Room 6		
Plain buff ware	5	Metate 1
Room 7[41]		
(Upper Floor)		
Plain buff ware	20	Metate 1
Black cooking ware (light red interior)	8 (=28)	Mano inside 1

[41] This room possessed two floors, one 6 inches below the other. The upper floor had evidently been made by adding layers of adobe to the lower. The layers could not be counted because of the large quantity of ashes between them.

TABLE 15 (*Continued*)

Potsherds	*No. of sherds*	*Other objects*
		Pestle 1
		Rounded hammerstones 3
		Arrow straightener 1
(Lower Floor)		
Plain buff ware	7	
Black cooking ware (light red interior)	18 (=25)	
Room 8[42]		
Black-on-red (good quality)	1	Manos 2
Polished red ware	12	Large, round-ended stones (worked) 2
Polished black ware	15	
Plain buff ware	40	
Black cooking ware (light red interior)	45	
Corrugated	5 (=118)	
Room 9[43]		
No sherds in room		Metate 1
Room 10		
Polychrome red-and-black-on-buff (These pieces all belonged to one olla that had been broken.)	45	
Polished red ware	1	
Black cooking ware (light red interior)	5 (=51)	
Room 11[44]		
Polished red ware	15	Metates 2
Plain buff ware	60	Axe-head 1
Black cooking ware	10 (=85)	

[42] A burial was 2 feet below the walls marked X in the floor plan. Head to east, bones very soft and decomposed. One plain red ware olla, having lug handles at rim, lay 3 inches east of skull.

[43] This room had two floors, one 6 inches below the other. The upper floor had been formed by additions of layers of adobe. The exact number of layers could not be ascertained because no distinct dividing line separated them, but the impression was that there were either two or three.

[44] A burial 2 feet below northwest corner of room (marked X on floor plan). Head to north, bones very soft and decomposed. One polychrome red-and-black-on-buff olla, having coarsely executed diagonal lines with opposed triangles between, was found.

TABLE 15 (*Continued*)

Potsherds	*No. of sherds*	*Other objects*
Room 12		
Black-on-red (good quality; designs in interlocked triangles with bent sides).	40	Square-shaped stone 1
Black cooking ware (light red interior)	3 (=43)	
Room 13		
Black cooking ware (light red interior)	8	
Room 14		
Polychrome red-and-black-on-buff (effigy vessel, human facial features moulded on sides of olla).	12	
Black cooking ware (light red interior)	36	
Corrugated	3 (=51)	

Burials occurred in rooms nos. 5, 8, 10, 11, and 12, under corners, without pottery. All of the bones were soft and decomposed.

Forty feet east of the structure there was a circular pit lined with boulders; its diameter was 7 feet and depth 2 feet. Twenty-five feet south of the house there were three smaller pits of similar construction. Their use remains hypothetical. According to ranchers in the vicinity, the Mexican people of this region roast mescal plants in rock-lined pits, and it is possible that the mound people used their pits for a similar purpose.

Mound No. 5

Mound no. 5 is situated at San Marcos, 5 miles south of Las Varas and 200 feet west of Las Varas creek. The central portion of the mound was 7 feet above the normal ground surface. It measured about 120 feet in length by 110 feet in width. Mexicans had trenched into a portion of the mound from ground level exposing walls. The location of the rooms from ground level was thus made convenient and excavation carried on more easily. Five rooms in the central part of the structure were opened. The more important features will be described rather than the details of all the contents.

Walls were of adobe with no reinforcement of boulders; average thickness, 1 foot; maximum height, 6½ feet. The plaster on the walls was generally well preserved and there were from 10 to 16 layers, all blackened. The thickness of one layer was about 1 millimeter (pl. 20*a*).

Doorways were of two types: rectangular, and step-passage. Since the walls were preserved to a greater height than in mound no. 4, the door shapes could be observed more closely. The lintels of two rectangular doorways were below wall tops (pl. 20*a*).[45] They were composed of three or four flat strips of wood plastered with adobe on their lower surfaces and they extended 4 inches into the walls on either side. No lintels of step-passage doorways were preserved because the walls had been broken below them. In the photograph (pl. 20*b*) the doorway appears to be intact, but in reality the arch is formed of earth which had fallen from above and become compressed through age. The original wall is broken just below the arch. There were seven doorways in the five central rooms of this mound; two of these were rectangular, five step-passage type.

All rooms contained wood ashes in layers about 1 foot above the floors. Pieces of wood which had been only partially burned measured 4 inches in diameter. Without doubt the ashes were the remains of roof beams, since no specimens of the latter were to be found. Holes 2 feet in depth, formerly holding upright supporting posts for the roof, were located in the centers of rooms. Several large metates were turned wrong side up in loose earth above the floors. Circular depressions in the floors were similar to those observed at Corralitos; one contained a polished blackware bowl. Ashes beneath this vessel proved that live coals had kept food or water warm within it. A description of pottery found within this mound has already been given (see p. 337). Plate 21*a* shows layers of plaster adhering to the adobe walls and the location of a burial under a corner floor. A piece of basketry and a section of two-ply fiber rope were obtained from one of the rooms. The basketry was diagonally plaited, three strands placed over and three under the warps, with each strand advanced one stitch.

Other Mounds

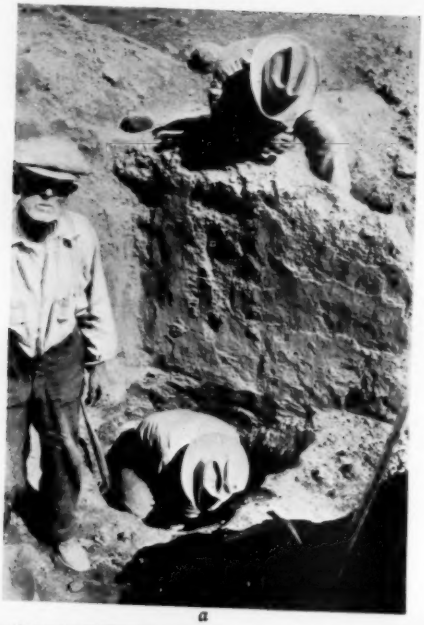
The features of other mounds excavated in this region were similar to those already described except in mounds nos. 3 and 6, where the doorways were rectangular only. Wood ashes were found in all of the mound structures. Usually there was one layer about 6 inches thick, and this was generally about 1 foot above the floors. No roof timbers were found. In mound no. 1 broken ollas which had formerly rested on stones with fires beneath were observed. The earth was scorched above the ollas, showing that the fires had been burning when the walls or roof fell. In several of the mounds heavy metates were turned in unnatural positions on the floors or were contained in loose earth above them (pl. 21*b*).

[45] The "rectangular" doorways of this mound had sides slightly converging toward the top.

a

b

Mound no. 5. *a*, plastering on walls; *b*, step-passage doorway.



a

b

Mound no. 5. *a*, location of a burial; *b*, metate and mano.

I found no step-passage doorways at Corralitos, but Mrs. Houghton who has excavated in the Ramos district had found such openings. Roof timbers are not to be found in the mounds of Casas Grandes valley, but there are quantities of wood ashes.[46] I saw no kiva-like structures at any site and they had not been seen by my informants.

The Cliff Dwellings, Babicora District

Groups of cliff dwellings at widely separated localities in the Sierra Madre at points west and southwest of Las Varas ranch were investigated. Of these, the largest and best preserved group lies on the east side of Chico canyon not far from the junction of the Rio Chico and the Aros (see fig. 3). It is located under an overhanging rock wall in an almost unapproachable place visible only from the opposite side of the canyon. An accurate count of the number of rooms is difficult because some of the walls of the structure were almost obliterated. However, an estimate of fifty-five would be conservative. Plans, measurements, and details of the entire cliff house were noted. The most important features will be given here.

The building was formerly a unit. In front it was either two or three stories in height built up in such a manner that the overhang of the cavern prevented further overhead construction. The roofs were formed partly by the overhanging rock, partly by poles laid crosswise on the walls and a layer of adobe plastered over them. Behind the front rooms others had been built, the sloping rock determining the number of stories. At one point space admitted a section of rooms three deep; elsewhere they were two deep with rear walls built in the hindmost, leaving a space between wall and rock. A runway of rough masonry had been constructed in front of the house to provide a level place on which to move about (pl. 22*a*).

The walls were of adobe with boulders, twigs, and vegetable matter within them to act as reinforcement (pl. 22*b*). They averaged about 1 foot in thickness. Outside walls were plastered with a 1/4 inch layer of fine adobe, and inside walls were coated with one layer of very smooth, blackened, adobe plaster 1/16 inch in thickness. The floors in many of the rooms were stone-flagged, with adobe mortar between the flags, and a smooth coating of adobe spread over the whole surface.

Doorways were of three types: (1) Trapezoidal doorways, as in plate 23*b*. (2) Step-passage doorways, having sills at various distances above floors. They measured about 2 feet 8 inches from sills to lintels. (3) T-shaped doorways, having sills flush with floors. They were about 4 feet 6 inches

[46] This information was obtained from Mexicans who had secured pottery from mounds in Casas Grandes valley.

from sills to lintels. Type no. 3 occurred in outside walls only; the others in both outside and inside walls (pl. 22*a*). All types of doorways had lintels of flat strips of wood or of twigs and these were plastered on the under surfaces (pl. 23*a*).

There were three kinds of fireplaces: (1) Adobe platforms with basin-like depressions at their ends (pl. 23*b*). (2) Platforms of adobe with depressions at one end against the wall. The sides of the depressions were blocks of adobe. (3) Semicircular platforms of adobe, diameter sides against the walls.

A conspicuous feature of the house was the large number of small holes in the front wall commanding views of the points of approach to the dwelling. They measured 6 inches square and some had been sealed up with adobe (pl. 23*a*). Adobe bins containing corn cobs were observed in several rooms. In one bin dried kernels of corn were found. On the walls of one of the rooms step designs had been incised. Ascent to upper floors was made by means of ladders from without, since the upper rooms were not accessible from the lower ones.

Some basketry was picked up inside the cliff house. It was of diagonal plaiting, three strands placed over and three under the warps, with each strand advanced one stitch. The material was said by Mexicans to be yucca. Two- and three-ply fiber cord, a fine quality of two-ply thread, and a small piece of woven cloth were found in a shallow refuse heap outside the house. Potsherds obtained from the same refuse heap showed pottery types as follows:

TABLE 16. SHERDS FROM THE REFUSE HEAP, CHICO CANYON CLIFF DWELLING

Pottery types	*Decoration*
Polychrome red-and-black-on-buff	Broad, horizontal, alternating, red and black lines, triangles with bent sides, interlocking prong designs, dot within a square, one effigy vessel sherd.
Polished red ware	
Polished black ware[47]	

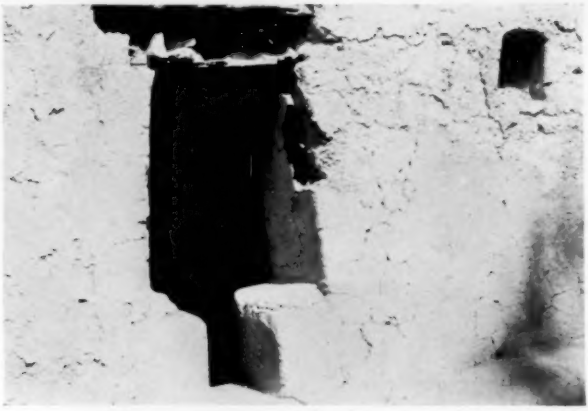
Twenty feet in front of the house stood the base of what had formerly been a large olla-like structure of adobe reinforced with grass. The top had fallen to the ground, exposing the smoothly plastered interior. It contained corn cobs and refuse. The height, when intact, would probably have measured about 6 feet.

[47] The number of sherds was small, therefore no percentages are submitted.

a

b

Chico canyon cliff house. *a*, outside view; *b*, wall construction.



a

b

Chico canyon cliff house. *a*, step-passage doorway; *b*, fireplace.

Other cliff dwellings in the Babicora district had characteristics similar to those of the group just described. A thirty-room dwelling in the Garabato canyon, 20 miles west of Las Varas, was investigated. The architecture was the same style as that of the Chico group: T-doorways led to the outside, step-passage and rectangular doorways from one room to another. Fireplaces were of the platform-and-depressed-basin type. Pottery was the same as that of the Chico canyon dwelling, with the addition of incised red ware and plain buff ware. A feature of interest in this house not found in others was a room which had apparently been used as a watch tower. It had a number of small square windows which viewed all possible means of approach to the house. Designs characteristic of pottery decoration of the mound ruins had been painted on the walls. Smaller groups of dwellings in the region possessed architectural features similar to the larger ones.

Summary

The Typology of Objects

Shapes

While the shape of the typical polychrome olla is distinctly local, many variations of the type reflect Southwestern influence. On the other hand, the forms of the polished red and polished black ware jars point toward associations with the South.

A conspicuous characteristic of the shapes of Casas Grandes pottery vessels is the high percentage of effigy jars, many of which resemble vessels from parts of Mexico nearest to northwestern Chihuahua. Jars in human or animal shape, or having human faces modeled on their sides, occur generally in cultures of Mexico subsequent to the Archaic. This applies especially to the northernmost extension of these cultures, i.e., to the La Quemada-Totoate-Chalchihuites culture of Jalisco and Zacatecas. These vessels appear in Chihuahua and cease abruptly at southern extensions of Southwestern areas. Such a distribution indicates cultural relations to the South.

Effigies made in polished red ware, polished black ware, and plain buff ware, pottery types which are evidently of earlier development than the polychrome series, show a considerable familiarity with the shaping of life figures. Raised-bowl and bottle-like shapes point toward southern influence. Pottery figurines occur in such small percentage that their weight in the determination of cultural relations is almost negligible. Carved stone images of human and animal figures suggest possible southern influence, but conclusions are uncertain, when based on comparisons of objects of rough stone, where important bodily features have become obliterated. Evidence of the absence of influence from the region north of the Rio Grande is the lack

of pitchers, large bowls, mugs, ladles, and spoons, which are typical of the Southwest.

Decoration

Whereas influence from the South is apparent on the forms of the pottery vessels, many of the design elements are undoubtedly Southwestern. The composition of these elements is, however, unique with the artists of the region investigated. Decoration of fine polychrome ware was based upon varieties of line paneling which necessitated much modification of the elements themselves. Great ingenuity is displayed in these compositions, which show a clear grasp of many artistic principles.

The Upper Gila spiral is common here. The macaw head design is known only from this area and may be considered a local development. An example of a foreign design developed under local stylistic limitations is the plumed serpent. The concept undoubtedly came from the South but the way in which it is carried out is local. The outline process of negative drawing is a second illustration of southern features adopted and adapted to suit local taste.

Design, then, points to closer affiliation with the Southwest than with Mexico farther south but has nevertheless enough Mexican characteristics to show direct influence from that area.

Technique

The Southwestern decorative techniques found in the Casas Grandes culture are: black-on-red, corrugated.

The purely Mexican techniques are: modeling, incision, incised designs filled with black and red paint.

Common to both areas are: polished red ware; and negative painting, found, e.g., in the Mimbres area and at Totoate, Jalisco.

Local techniques are: polychrome-red-and-black-on-buff, red-and-black-on-white slip, polished black ware,[48] the formal process of negative painting.

Thus, the external relationships of Casas Grandes decorative techniques are divided between the Southwest and Mexico farther south. The use of paneling and negative painting as factors of composition should be emphasized as the most prominent Casas Grandes contribution to art. The art style could not, however, have been so highly perfected without the artistic mastery of these two highly specialized and distinctive techniques.

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[48] Prehistoric Southwestern vessels of this technique have only one surface polished black (see p. 359).

The Mounds

The architecture of the Casas Grandes area shows contrast rather than similarity with the Southwest and Mexico. In the Casas Grandes area walls were formed of adobe, which was in turn plastered. In the Southwest stone masonry was used for pueblos and cliff dwellings more generally. But in the Middle Gila region adobe was used.[49] Dr. Kidder considers the Casas Grandes and Middle Gila cultures to be related architecturally.[50] Since, according to Gladwin, the polychrome ware of the Middle Gila is closely allied to that of Chihuahua,[51] and since effigy vessels are found in both regions there may have been contacts between the two areas. In my opinion, however, Gladwin's illustrations are not particularly convincing. At Chalchihuites walls were built of sun dried brick.[52] Coursed masonry was used at La Quemada.[53] Still farther south at Santiago Ahuitzotla, D. F., Mexico, both adobe bricks and stone were used in wall construction.[54]

Since the distribution of materials used for walls is so sporadic it may not be of great significance in proving contacts. For, of course, the possibilities for wall structure are not numerous.

The original height of the mound structures is undetermined because of the broken walls. However, the positions in which heavy metates with manos close by or within them were found lying in loose earth which had fallen in, sometimes two feet above the floors, would indicate that they had fallen from above. This seems to indicate that there were second floor rooms in which the grinding of corn had been practised.

Conditions found within the mounds at Babicora, such as burned roof beams, metates turned in unnatural positions on house floors, fires interrupted in the process of burning, and household implements scattered about, show that there had been great confusion therein. It may be concluded, therefore, that this region was subject to the exploitation of hostile tribes who finally caused abandonment of the mound houses by the inhabitants. An insufficient number of Casas Grandes mounds was investigated, but the observations in excavations made, together with the information from those familiar with conditions within the mounds of that district, suggest that the conclusion applied to the Babicora mounds might also apply at Casas Grandes.

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[49] Fewkes, I, 37.
[50] Kidder, II, 117.
[51] Gladwin, 82.
[52] Gamio, 320.
[53] Batres, 8.
[54] Tozzer, 21.

The Cliff Dwellings

The similarity of culture traits of the cliff houses of the Babicora district to those of the mound houses is so noticeable that there can be little doubt that their inhabitants were contemporaneous. Since, however, cultures practically identical need not imply physical relationships between the people, additional evidence would be acceptable. Such evidence is available in the mound houses of the open country where conditions indicative of raids by hostile tribes were found. Desertion of the mound houses was apparently followed by a building of temporary shelters in the hills to the west between the open country and the present region of the cliff dwellings, where numerous rock walls, 1 to 3 feet high, and rock outlines of rooms are encountered. In the vicinity, potsherds in polychrome red-and-black-on-buff, red-on-black, and coarse red ware, as well as metates and manos were found. It is probable that the former inhabitants of the mound houses operated from these shelters as centers and constructed cliff houses in the mouths of caverns and on rock ledges where security was offered and defense made easy.

The cliff dwellings to the west of Casas Grandes valley have been described by Blackiston[55] and Lumholtz.[56] In architectural features they appear to agree with those of the Babicora district. Blackiston remarks on the similarity of the pottery of the mound culture and that of the cliff dwellings west of Casas Grandes valley, concluding that it represented the same people.[57]

For the Babicora district, it is suggested that the probable cause of abandonment of the cliff dwellings was scarcity of food. The rocky, poorly watered character of the region in which these structures are situated is extremely unfavorable to the growing of corn. Yet corn constituted a principal article of food, as evidenced by the quantities of cobs observed in the vicinity of the houses.

Conclusion

Altogether then the culture of the Casas Grandes region shows many local developments. In its relation to neighboring cultures it shows closer affiliation to the Southwest, as evidenced by many details, than to Mexican cultures proper. There are, however, sufficient intrusions of Mexican elements to show that there were contacts from south as well as from north even though the former had less influence than the latter.

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[55] Blackiston, II, 8: 20.
[56] Lumholtz, 1: 61.
[57] Blackiston, II, 8: 24.

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THE PHYTOGEOGRAPHY OF CULTIVATED PLANTS IN RELATION TO ASSUMED PRE-COLUMBIAN EURASIAN-AMERICAN CONTACTS

By E. D. MERRILL

THERE seems to be little unanimity of opinion as to the origins of ancient civilizations in America. There is the group that would derive these full-blown from a hypothetical Atlantis[1]—the supposed source alike of the original Mediterranean and American cultures; some, who cannot accept the Atlantean theory, explain certain similarities between the ancient civilizations of Mexico, Peru, and Central America and those of Eurasia, through the transmission of ideas indirectly from the Mediterranean region and western Asia across Polynesia to America, undaunted by the distance and the lack of corroborative evidence in the great stretches of Malaysia and Polynesia; others set up the hypothetical continent of Mu somewhere in the Pacific ocean whence America was populated; others who insistently claim that the early American cultures were developed by the "lost tribes of Israel"; others pin their faith on Welsh colonization under a Prince Modoc about 1170 A.D.; and still others would derive these early American pioneers of civilization, or at least the higher cultures in America, from the Aryans, Mesopotamians, Egyptians, Greeks, Latins, Japanese, Chinese, and even the Polynesians. There seems to be no limit to the fancies of those who have solved, to their own entire satisfaction, the riddle of early American civilizations. Opposed to this rather large heterogeneous group are those who maintain that the pre-Columbian cultures in America are autochthonous, having developed here wholly free from any direct or indirect contacts with the Old World, except those of minor importance via Siberia, Behring straits, and Alaska.

As one reads the literature, mostly popular and semi-popular, supporting the first group of fanciful theories, one may be impressed by the array of assumed facts that are presented; and sometimes one is almost convinced that the theorist must be correct in his deductions because of the plausible presentation of the supporting evidence—until one realizes that the data given represent only an affirmative argument in support of a preconceived theory, the negative data usually being conspicuous by their absence. At this stage of realization he will probably cast his lot with the last group who maintain that man reached America as a very primitive savage and that the pre-Columbian civilizations in America developed here independently

[1] See L. Spence, The Problem of Atlantis, 1–232, pls. 1–15, 1925 (revised edition); Atlantis in America, 1–213, pls. 1–16, 1925; The History of Atlantis, 1–238, pls. 1–16, 1926.

of all direct or indirect European or Asiatic influences, except minor ones coming in from Siberia via Alaska.

To emphasize the diversity of opinion that exists and to indicate how difficult it is for the man on the street to form a correct judgment, the following passages are quoted [italics mine]:

Truly here is a land [Peru] of a thousand romances with its challenging inklings of prehistoric races, its stirring stories of Incan dominion . . . among archeological traces of civilizations *that seem to affirm their kinship alike to Egypt, Greece, Babylon, and the Orient* they gather new fascination and arouse new speculations.[2]

I shall merely mention the fact that Toltec and Maya civilizations did not originate on American soil. . . . This civilization first appears in America, like the Crô-Magnon in Europe, as full-blown, with a ready-made art, a high condition of ecclesiastical and social polity, and an advanced system of hieroglyphic writing. *These have no roots in the soil.*[3]

When the Maya civilization first manifests itself upon Central American soil, it does so not in any simple or elementary manner, but as a full-blown culture, with a well-defined art, architecture, religion, and system of hieroglyphic writing. *We find not a single trace of its evolution or development upon American ground.*[3]

One frequently sees newspaper articles bearing on this subject, a recent one emanating from Los Angeles entitled "Aztec Link with Chinese Seen in Urns Unearthed in Mexico," quoting G. Ryden to the effect that:

Many of the faces on the urns are pure Chinese in character and others strongly resemble ancient Egyptian sculpture and pottery

and concluding that

Without a question there was a connection between the Chinese and Aztec civilizations and possibly with the Egyptian.[4]

In sharp contrast to the above is the following anthropological opinion.

There is no evidence that it [pre-Columbian America] ever received "a dose of civilization" from the old world. A close study of aboriginal America will convince any one that man probably arrived here with a minimum of culture (the bow and arrow or spear thrower, the dog, fire, and the ability to chip stone) *and that agriculture, architecture, writing and so forth are strictly autochthonous.*[5]

The quotations from Spence are from a protagonist of the Atlantis theory, one that would derive the early Mediterranean and American cultures

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[2] W. J. Showalter, The Lure of Lima, City of the Kings. Nat. Geogr. Mag. 57: 784. 1930.
[3] L. Spence, The Problem of Atlantis, 116, 121, 1925. (Revised edition.)
[4] The New York Times, p. 29 (Oct. 3), 1930.
[5] P. S. Martin in the Atlantic Monthly, 861, June, 1930.

from a hypothetical Atlantis situated between Europe and America. He, with many others, maintains that the Atlantean theory of origins of early American cultures is more plausible than that supported by Perry, Elliot-Smith, and others who postulate the slow spread of Egyptian civilization of the pyramid epoch across the Pacific to America. Neither group is apparently willing to admit the possibility, much less the probability, of no contacts whatever, direct or indirect, between the two hemispheres that had any important bearing on the development of the early American civilizations.

The diametrically opposed theories of early Eurasian influences versus an autochthonous civilization in America lead me to approach the subject from a point of view that has curiously been overlooked, ignored, or minimized by proponents of the Eurasian influence idea, and by most or all popular writers on ethnological subjects bearing on this question, and that is from the standpoint of the origins of cultivated plants and domestic animals, or in other words the origins of agriculture. These points have been considered by some ethnologists who have realized their full significance, but many seem to have avoided anything approaching the field of biology.

From the very large amount of data now available it is clear that man has existed for a long period of time in both hemispheres—in fact so long that the period, at least in Eurasia, is to be measured in terms of geologic time, rather than on the basis of our current historical chronology which covers but a few thousand years. In spite of this long human history *there was not a single basic food plant or a single domesticated animal* (except the dog) *common to the two hemispheres before Columbus' voyage in 1492.*

This italicized statement is not an original or even a new one. A. de Candolle[6] in the last entry under concluding remarks in his classical work on the origin of cultivated plants states the matter thus:

In the history of cultivated plants I have noticed no traces of communication between the peoples of the old and new worlds before the discovery of America by Columbus.

The fact was so obvious that he apparently did not consider it even necessary to amplify the statement further in connection with any supposed Eurasian influences on early American civilizations.

It is a striking and an incontrovertible fact that the early American and Eurasian civilizations, both based on agriculture, were established on entirely different and unrelated series of cultivated plants and domestic animals. The only domestic animal common to the two hemispheres in pre-Columbian times, the dog, clearly of Eurasian origin, supports the argu-

[6] A. de Candolle, The Origin of Cultivated Plants, 1–468, 1898.

ment that man reached America as a primitive nomad, either bringing the dog with him or receiving it at a later date through his northern contacts in a land inimical to agriculture. Man coming in as a primitive nomad over a cold northern route developed agriculture independently in America as he gradually extended southward and came in contact with native plants adaptable to cultivation as a source of food. Even in case man left Eurasia on his American adventure by a northern route subsequent to the development of agriculture in the home land, he would have lost all the arts of agriculture, all the agricultural plants, and all knowledge of the subject in the long period involved in nomadic life as a hunter and a fisherman. This original journey was not one of a few weeks, or months, or years, but covered many generations.

An important difference between pre-Columbian American agriculture and that of temperate Eurasia, is that in America most of the basic food plants were of tropical or subtropical origin; but a few of these, such as maize, beans, squash, and pumpkin were eventually found to be adapted to growth in cooler regions, and in pre-Columbian America were widely distributed in temperate areas. In contrast to this, Eurasia, in addition to supplying our most important domesticated animals that could thrive in the cooler regions, produced a very striking series of basic food plants in temperate regions. Some such plants were: wheat, barley, rye, oats, millet, Italian millet, buckwheat, a variety of fruits, and a very important series of vegetables, the Brassicas (cabbage and the very numerous varieties of turnips and of mustard), the radish, the pea, parsnip, carrot, beet, lettuce, endive, and numerous others. Is not this factor one to be considered in explaining the reasons for the establishment of early high civilizations in the tropical and subtropical parts of America in contrast to the development of ancient civilizations, particularly in Europe, under temperate and subtemperate climatic conditions?

The basic food plants of Eurasia are the common cereals, such as wheat, rye, barley, oats, rice, millet, Italian millet, sorghum, pearl millet, and others of minor importance such as ragi, teff, coix, etc.; in this category for convenience buckwheat may be placed, although it is not a true cereal; among the vegetables are the turnip, cabbage, rape, radish, beet, parsnip, carrot, onion, leek, garlic, shallot, spinach, egg-plant, lettuce, endive, salsify, celery, asparagus, pea, soy-bean, cow-pea, chick-pea, pigeon-pea, lentil, broad bean, hyacinth-bean, asparagus-bean, taro, the yams, etc.; among the fruits are the apple, pear, plum, cherry, European grape, apricot, peach, prune, olive, fig, almond, persimmon, quince, pomegranate, melon, watermelon, cucumber, and in the warmer regions the banana, cocoanut, orange,

lime, lemon, pomelo, date, mango, bread-fruit, jak fruit, rambutan, litchi, longan, lansone, mangosteen, and others. The domestic animals include all breeds of cattle, horses, water buffaloes, yaks, sheep, goats, swine, ducks, geese, hens, and pigeons. These are the basic agricultural foods of the entire eastern hemisphere; of course, many of them are limited in their range by climatic conditions. From the standpoint of European civilization, many of the plants that will thrive under European climatic conditions, and some of the animals, did not actually reach Europe until well into the period of recorded history; some were introduced in very modern times. The point I wish to make is that they are all natives of some part of the Old World.

While the list of essential food plants and domesticated animals of Eurasia is an impressive one, certain very important items are lacking; these are essentially the agricultural products on which the American civilizations were based. The basic food plants of American origin include but one cereal, but this a very important one, maize or Indian corn; in addition, there are such vegetables as the potato, sweet potato, lima bean, our common garden and field beans, tomato, pepper, Jerusalem artichoke, squash, pumpkin, quinoa, peanut, and in the more strictly tropical regions cassava, arrowroot, chayote, and such fruits as the papaya, avocado, pineapple, custard apple, soursop, cherimoya, sapote, sapodilla, cacao, cashew, and others. The domesticated animals were peculiarly few, the llama and alpaca in South America and the turkey in Mexico. These are the basic agricultural products on which the American civilizations were based, and none of them were known in Europe or Asia previous to 1492, even as none of the longer Eurasian list were known in America before that date.

Agriculture as an art must have existed both in the Old and in the New World for many centuries previous to the dawn of anything that can be interpreted as recorded history. When man had attained a degree of culture that enabled him to make simple records, or reached the period we speak of as the dawn of recorded history, every important basic food plant now grown was already in cultivation somewhere in the world; many of these were widely disseminated in either the eastern or the western hemisphere, *but none were common to both regions*. Primitive man had also selected and tamed all of our important domesticated animals. While modern man has greatly improved both his cultivated plants and his domesticated animals through breeding and selection, he has actually brought into cultivation not a single important basic food plant and has added nothing to the list of domesticated animals that we inherited from our remote prehistoric ancestors. Our modern accomplishments in the improvement of plants and

animals, although important and greatly beneficial to society, are perhaps insignificant as compared with the vastly greater accomplishments of our very remote ancestors; they actually brought these plants and animals in from the wild, selecting, domesticating, improving, and adapting them to their needs. They thus established a permanent agriculture, and insured a constant and dependable food supply, on the basis of which it was possible for higher civilizations to develop. It is an evident fact that this process of domestication of plants and animals took place independently in various parts of Eurasia and in America; that agriculture was developed in the two hemispheres independently of each other's contributions in plants, in animals, and in methods; and that concurrently and likewise independently civilizations developed in Eurasia and in America, the one being uninfluenced by the other in the least.

Here is a most striking and important conclusion drawn from the domain of botany that clearly invalidates various theories that have been proposed and stoutly defended to explain the origins of American civilizations on the basis of Old World contacts. Had there been even the most tenuous or even merely accidental contacts, and these at long intervals, across either the Atlantic or the Pacific, after agriculture had become an established art, agricultural products, i.e., food in the form of seeds, tubers, etc., would have been among the very first items transmitted across the ocean; not a style of architecture, not sculpture, not hieroglyphic writing, not social, political, or ecclesiastical organizations, but the actual food or food products essential to the maintenance of life. Cultivated plants and domesticated animals failed to bridge the chasms of the Atlantic and the Pacific. If agriculture could be developed independently in America as was most certainly the case, for pre-Columbian American agriculture was based wholly on native American plants and animals, what reason is there for even thinking that the more advanced arts of architecture, sculpture, hieroglyphic writing, the organization of society, etc., could not have developed here? Why is it necessary to seek Eurasian origins for these developments?

To the theorist supporting a preconceived idea appertaining to American origins this situation may appear to be irrelevant and unimportant; to an individual approaching the matter from a biological standpoint, and familiar with the very rapid spread of American economic plants in Eurasia and vice versa subsequent to 1492, it assumes proportions of major importance. It is a factor that the popular writer and the ethnologist who concerns himself with a discussion of pre-Columbian Eurasian-American contacts cannot afford to ignore if he expects his conclusions to be respected among colleagues, and more particularly by those individuals working in

apparently unrelated fields, such as the biological sciences. To the protagonist of the Atlantean theory of American origins I merely query: Assuming the former existence of Atlantis somewhere between Europe and America for the sake of argument, what could have been its agriculture that transmitted to its supposed descendants in Europe and in America not a single basic cultivated food plant, nor a single domesticated animal in common?

It seems to be clear that primitive man attained a wide geographic distribution before he had developed any very high degree of culture. The positive evidence would seem to indicate that man had reached the New World from Asia sometime between 10,000 and 25,000 years ago. Is it not possible, during man's development in various parts of the world, that in relation to artifacts (such as stone implements, and the more primitive arts and crafts) there was a more or less parallel development in different regions and that the resemblances we note are largely or at least partly fortuitous? In other words, is it necessary to postulate that the development of any primitive art took place only in one specific locality, and that it was thence disseminated by man either directly by migratory groups or indirectly through contacts with neighboring peoples? Unquestionably some arts and crafts developed and were disseminated from a single place of origin, but certainly not all of them have this history.

There is a very common tendency to trace or to attempt to trace an art, an invention, or an innovation to a common source (even as comparative philologists stress the similarity of words and constructions in determining the relationships of various languages). Within limits, conclusions drawn from the results of comparative studies are reasonable and logical ones, but there are limits which are not always recognized. The school that cannot admit an autochthonous civilization in America presupposes Egyptian influences from the accidental or incidental similarities of American and Eurasian architecture, sculpture, hieroglyphics, political and ecclesiastical organization, etc.; then it tries to explain how these ideas reached America and developed here. After all, the percentage of similarities is really very small indeed as compared to the tremendously larger number of dissimilarities; and sometimes one needs a vivid imagination to see any resemblances, even when his attention is directed to the few selected comparisons.

A mental excursion into a field outside of one's specialty is frequently stimulating in the extreme, and often leads to a better understanding of problems within the mental excursionist's own domain. To the popular writer on ethnological subjects (such as possible pre-Columbian Eurasian-American contacts) as well as to the semi-professional, amateur, and near-ethnologists, I would bespeak the desirability of mental excursions into the

domain of biology, at least into the fields of phyto- and zoögeography, before conclusions are reached that from a biological standpoint are absolutely untenable. Unless they take these mental excursions with an open and unbiased mind, they should, figuratively speaking, remain at home. A reviewer's suggestion to one author (Spence) that the perusal of certain contributions referred to by the latter as "more or less obscure papers" might enable him to modify or correct his hypothesis resulted in a statement that:

> An examination of these has not altered my original views, which were the outcome of prolonged consideration and research.

This is an illustration of an individual taking a mental excursion into fields foreign to his specialty but with a closed mind or one so prejudiced in favor of a preconceived hypothesis that the journey was fruitless; or maybe the phytogeographic item above discussed was of too little importance to be even classified among the "more or less obscure papers." After all, we take our cultivated plants and domesticated animals for granted and seldom give a thought as to whence they came, when and where they were adapted to the needs of man, how, when, and by whom were they disseminated, and whether or not major distribution took place in prehistoric or in modern times. But these factors are of distinct importance in relation to certain ethnological questions.

It is clear that all cultivated plants and all domesticated animals were derived at some time in the development of the race, and for the most part early, from wild forms. Hence, it is important that the home of the original species be considered, as well as how and when these cultivated plants and domesticated animals were distributed, and what limits there were to universal distribution. To him who theorizes on pre-Columbian Eurasian-American contacts it is a subject worthy of the most critical consideration, and one that cannot safely be ignored. The biological-agricultural evidence is wholly and unmistakably in support of an autochthonous development of the pre-Columbian civilizations in America, with no Eurasian contacts or influences shaping or developing them.

NEW YORK BOTANICAL GARDEN,
NEW YORK CITY

WISCONSIN POTTERY

By W. C. McKERN

IN SO FAR as old records and ethnological investigations exist sufficiently adequate to warrant conclusions no ethnic groups of the historic period in Wisconsin were unfamiliar with the manufacture and use of earthenware vessels, nor has archaeological research recorded any culture in this area where pottery was not an important trait. Until additional evidence is forthcoming to the contrary, it seems probable that all the aborigines of this state were pottery makers.

Descriptions of pottery exist for the Menomini, Potawatomi, and Winnebago. These accounts are not only rather meager as to detail but, in the main, are rationalizations since either the pottery described does not occur in Wisconsin or any other known area or the methods of manufacture given are highly improbable if not totally impossible. However, in one or two instances, the description of the pottery itself resembles rather closely that actually found at primitive sites, and should be accepted as elements of importance in assessing the available data.

Archaeological field investigations have supplied us with a few entire pottery vessels and quantities of sherds. If the historic Indians made pottery, it must be plentifully represented in the ware occurring at specific sites formerly occupied. Other types of pottery may also be present at the sites, due to earlier, foreign occupation, but the materials occurring at such places must include the products of the historic inhabitants.

However, the pottery from Wisconsin campsites and graves obviously represents more than a single basic type. The local student's first task, therefore, is one of classification; the next relates to type distribution. The considerable archaeological information on pottery must be combined with the meager and largely inaccurate accounts by Indian informants of the pottery of historic groups, and with this material the student must try to establish, where possible, relationship between locally prehistoric and historic cultures. Fortunately, the results in adjacent fields are applicable to local problems.

The most plentiful and widespread pottery type within the state may be briefly described as follows: a lightly-fired ware, coarse and granular in texture, grit tempered, brittle; the body has a conoidal base; the neck is broad and low with a slightly flaring rim, or the upper pot terminates without neck in a straight or slightly contracted rim; rims are thin, thickened or outwardly folded; a decorative treatment of a greater portion of the outer surface consists of a general roughening imprinted by means of a cord-wrapped paddle, or similar implement, and outer rims are in most instances

additionally decorated with simple geometric patterns imprinted with cord-wrapped implements, or to a less prevalent extent, incised (pl. 24*a*).

This type is found to some extent wherever primitive campsites have been located in Wisconsin, but is particularly abundant and the dominant type in the eastern half of the state, especially along the shore of Lake Michigan and in the Fox and Rock river basins. Outside the state, it is the most common ware east in Michigan; to the south it abounds in Illinois; to the west it is of common occurrence in Iowa, and turns up at many sites in Minnesota; it occurs at least as far north as Isle Royale, in Lake Superior. Its distribution closely corresponds to the probable distribution of Algonkian tribes in the Western Woodlands area. It is basically identical with eastern Algonkian ware and is exclusively present at certain village sites known to have been long occupied by historic Algonkian groups during the era of their pottery manufacture. Therefore, it must include the pottery types, or subtypes, of the historic Algonkians of Wisconsin. Accordingly, it seems justifiable to refer to it as an Algonkian type of pottery, or more specifically, a Western Woodland Algonkian type.

However, inasmuch as an Algonkian type of pottery might be diffused to another ethnic group, a non-linguistic terminology seems advisable. For the Wisconsin area I am naming this ware "Lake Michigan ware," since the shores of this lake apparently comprise the strong center of distribution. The term is intended to suggest not a limited region, but rather a center of dominant occurrence. Terminologically boundaries are less important than the center of culture dominance, whence, through migration and diffusion, influences would normally extend over an area so broken and irregular in outline as to defy a hard and fast determination of boundaries.

The effigy mound pottery, as represented both in vessels and tobacco pipes from the peculiarly Wisconsin tumuli, is typical Lake Michigan ware (pl. 24*b*). This raises the question whether, after all, the effigy mound builders were not Algonkians. Apart from mound-building itself, archaeologists have not as yet found specific evidence of traits foreign to the Algonkians, and the current belief that the prehistoric Algonkians of the Woodland area did not build mounds is a pure assumption.

The pottery type of next widest distribution is basically different in all respects. Although the product of low firing, it is at its best markedly superior to the finest Lake Michigan type ware in hardness and durability. It is rarely grit-tempered; I know of but one specimen. Shell tempering prevails, although an unknown material, perishable when subjected to heat, was used in a great many instances, resulting in small, empty cells permeating the material. Sometimes both shell and perishable tempering were

a

b

c

a, Large pottery vessel illustrating Lake Michigan ware. Mended and restored.
b, Large pottery vessel found in effigy mound, illustrating Lake Michigan ware. Mended and restored.
c, Large pottery vessel illustrating Upper Mississippi ware. Mended and restored.
(Milwaukee Public Museum Photos.)

employed. The ware is flaky, rather than granular, very light, and tends to break in straight lines or regular curves. The surfaces are characteristically smooth though sometimes pitted, owing to the perishable tempering. A type shape prevails, with few exceptions: the body is ellipsoidal, broad and squat, with a rounded rather than conoidal base; the neck is nothing more than the line of juncture between the flaring rim and the contracting upper walls of the body; large vessels are generally, and small vessels occasionally, equipped with a pair of vertically placed loop handles, situated on diametrically opposed sides, connecting the rim with the upper shoulders. The decoration is invariably by incision, but in many instances takes the form of broad fluting. The ornamented area is the upper body below the neck. The lip is generally scalloped or notched (pl. 24*c*).

The distribution of this variety is comparatively limited. In so far as there is accurate information, it is most plentiful at sites along the shores of the Mississippi and lower Wisconsin rivers, and in a small isolated area which had its center along the west shore of Lake Winnebago. It is found sparingly here and there at campsites elsewhere in the state. It is the pottery of Wisconsin mound builders in only one known instance, at the Grand River group of conical mounds in Green Lake county.

Outside the state, this type of pottery is more characteristic of a western area, centering in Minnesota, than elsewhere. It is reported from many sites in Minnesota, and Keyes[1] cites its occurrence in South Dakota. Strong[2] reports a very similar type in Nebraska. It apparently is sporadically encountered in Illinois and Missouri. It is an important Iowa form of pottery, known there as a marker for the Oneota culture. Its general distribution and its exclusive occurrence at well-known Siouan sites establish its Siouan authorship in at least many instances, and warrant the designation of this ware as a Western Woodland Siouan type.

This pottery is always associated with a complex of distinctly recognizable traits, viz., a preponderance of a triangular type of arrowpoint, an extraordinary plentitude of "snub-nosed" scrapers, a flatstone grinding mortar and muller, a Siouan type of stone pipe bowl, burial in the flesh in an extended position, and others of less importance.

To avoid the linguistic designation "Siouan," I have tentatively adopted "Upper Mississippi ware" for the Wisconsin variant of this pottery to suggest the apparent geographical center of its local distribution. Since Holmes uses the term in a different sense while the geographical connotation of

[1] C. R. Keyes, personal communication.
[2] W. D. Strong, personal communication

"Upper Mississippi" is too inclusive for present purposes, the term is here defined to apply to that portion of the river flowing between Wisconsin on the one hand and Minnesota and Iowa on the other, the center involved lying primarily in Minnesota, northern Iowa, and western Wisconsin. It does not appear to be dominant over any considerable area.

Upper Mississippi pottery has a strong, isolated occurrence along the western shore of Lake Winnebago in the midst of what otherwise is Lake Michigan culture territory. Specific sites in this area have produced Upper Mississippi ware exclusively. Some of them are known as Winnebago of the early historic period, when pottery was still being made. The only possible conclusion is that Winnebago pottery was a close-to-type variant of Upper Mississippi ware. In this respect the Winnebago seem to have retained a culture trait probably shared by other Siouan groups, despite long, close contact with Algonkians. Radin[3] has recorded a Winnebago account of pottery which, although patently a rationalization as to methods of manufacture, briefly describes the type of ware actually found at old Winnebago sites. According to this statement, the Winnebago product was tempered with shells and sturgeon glue, the latter suggesting a possible form of perishable tempering material; the vessels had rounded bases and an incised pattern for decoration. This description could not possibly apply to Lake Michigan pottery, but briefly gives the most important features of Upper Mississippi ware.

If Winnebago pottery was of this type, the effigy mounds of Wisconsin, with their typical Lake Michigan pottery, were not built by the Winnebago. As a matter of fact, there is no archaeological evidence for the Winnebago origin of these mounds. There is one group of mounds in Wisconsin—the Grand River group in Green Lake county—entirely composed of conicals, which were built by Indians making an Upper Mississippi type of pottery. The Grand River culture, therefore, is probably to be classified as a subtype of the Upper Mississippi culture, the only mound-building variant of this culture as yet discovered.

One of the most interesting pottery types found dominant at a Wisconsin site is a close-to-type variant of Cahokia ware. At present only a single site is known for this culture, the locally famous Aztalan fortified village site and mound group, situated in Jefferson county. The pottery is but one of a complex of culture markers, including truncated pyramidal mounds, ear spools of bone, stone and pottery, the Cahokia type of large chipped chert hoes, disc beads of shell, three-notched triangular arrowpoints, perforated shell implements, and other criteria of less importance.

[3] Paul Radin, The Winnebago Tribe, BAE-R 37: 76–103, 1915–1916.

Aztalan pottery is strikingly peculiar when compared with any other local variety. The ware, if lightly fired, is sometimes flinty hard,—as durable as any primitive pottery in North America. Fine shell tempering prevails, and the hardest ware is invariably of that tempering. There are numerous instances, however, where no tempering is apparent. Surfaces are characteristically smooth, and the finest examples are as highly and smoothly burnished as the best of late Peruvian Chimu ware. Material and surfaces are artificially colored in many instances. A reddish slip was applied to the exterior of some vessels, but surface color was more characteristically applied as a paint. In both cases the color element is some shade of red, varying from a dull brick color through brighter hues to a dark red. Some of the painted reds are sufficiently transparent to permit the tempering material to show through. The black ware seems sometimes to have been dipped in a dye, since the color permeates the material through and through; in other instances it was applied as a thin coating of paint.

The vessels are characterized by a great variety of shapes, the most characteristic being circular in lateral cross-section and squat, with a rounded base. The upward curve from the base terminates in sharply angular shoulders. The walls sloping from the angles of these shoulders toward the neck are either straight or concave in vertical cross-section. A short, flaring rim, generally present, is marked by a smooth, horizontally flat lip. The contracting walls of the vessel terminate in some instances in a square rim without the flare or show a very slight tendency to flare. The finer specimens are usually decorated about the area between the neck and the shoulder angle. Decorations are executed in sharp or smoothly rounded incisions. Patterns are uniformly geometric, including both simple arrangements of straight lines and curvilinear motifs (pl. 25*a*); the most characteristic of the latter is a continuous meander of complementary spirals. Sometimes such vessels have handles, vertically placed loops, each of two placed on diametrically opposed sides connecting the rim with the shoulder angle.

Bowl shapes include: hemispherical pots; squat ellipsoidal vessels without necks, the contracting upper walls terminating in a centrally placed superior opening; flat-bottomed shallow dishes, some with diametrically opposed handles respectively representing the head and tail of an animal or bird. Where present, bowl ornamentation invariably occurs on the outer rim and includes both incised and painted designs, the latter very simple and generally outlined by rows of deep indentations. Other less usual forms include ladles (pl. 25*b*), handled lids for vessels, and mushroom-shaped pottery shapers.

The last of the prehistoric Wisconsin cultures dominant at sites has been classified as Hopewell,—as a local variant of the more specialized Ohio culture of that name. The markers for this culture, aside from pottery, are: relatively large conical or ellipsoidal burial mounds; burial in rectilinear, bark-lined pits, sometimes covered with structures of poles and bark slabs, situated below the mound floor; disposal of the dead in extended position, commonly orientated with head toward the east; large chipped-stone implements of characteristic material and shape; copper beads; pearl beads; copper plaques of the "breast plate" type; copper ear spools; copper celts and axes; wooden beads covered with sheet silver and perforated for purposes of attachment; concave-based platform pipes of stone.

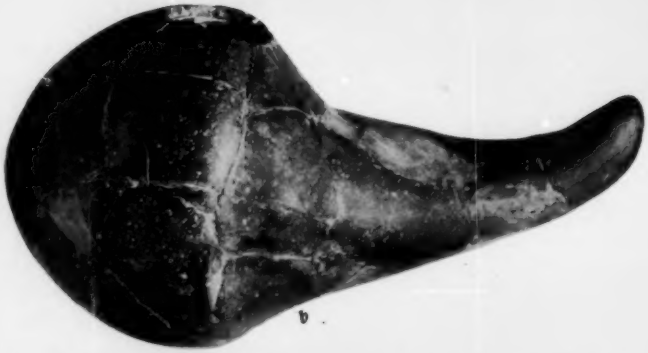
The pottery of this culture is represented in our collections by but few specimens, including three mended and restored vessels and a small number of sherds. Judging from these, the ware is either tempered with grit or some unknown material which has perished in the process of firing. The specimens range considerably in hardness, but at best are somewhat more durable than Lake Michigan ware. Undecorated surfaces are generally rough, but decidedly smooth in the case of the finer ware. Two shapes are represented. The one is associated with the poorer grade of ware and is a tall vessel with conoidal base. There is no true neck, but the upper walls contract slightly previous to flaring slightly at the rim. The other shape is associated with the finer ware (pl. 26*a*). The base is rounded. The walls are marked by four lateral bulges which give the vessel in lateral cross-section a square effect. The shoulders are abruptly rounded to meet a short, cylindrical neck, which terminates in an outward folded rim, vertically directed.

The decoration varies with the grade of the ware. The rim, however, is invariably ornamented either by means of an incised criss-cross design with an inferior border of indented dots, or by means of diagonally parallel imprinted or rouletted lines with a similar border of dots. Body decoration, when present, dominates the entire outer surface and follows a general plan of variously directed ornamental bands traversing a surface otherwise uniformly roughened by means of rouletting. The finest examples offer a unit design for an entire vessel with corresponding motifs on opposite sides, the design element heavily outlined by means of a bold incision.

The distribution of the local Hopewell variant has not been ascertained, but it is found along the shores of the Mississippi river, from Trempealeau county on the north to the Illinois state boundary line.

Some types of pottery sporadically found in Wisconsin do not seem to fit into any of the groups as classified here. These may either be due to foreign trade, or represent numerically small groups, or simply remain un-

a



b

a, Pottery vessel from the Aztalan site, illustrating Cahokia ware. Mended and restored.
b, Gourd-shaped vessel from the Aztalan site. Mended and restored.
(Milwaukee Public Museum Photos.)

a

b

a, Pottery vessel illustrating Hopewell ware. Mended and restored.
b, Pottery vessel with pointed, angular rim, of unclassified type. Mended and restored.
(Milwaukee Public Museum Photos.)

placed because of dearth of information. Since these campsite materials have never been carefully studied, and no one variety has as yet been found *in situ*, they must remain for the present unclassified.

Perhaps the most common and widespread of these unclassified types is characterized by the pointed rim. In most respects similar to ordinary Lake Michigan ware, it may be a subtype thereof; or possibly it is nothing more than a specialized unclassifiable shape. It is primarily peculiar in that the rim describes a pentagon rather than a circle, and the angles are marked by upwardly directed points (pl. 26*b*). This shape is common only at the Aztalan site, where it is markedly foreign to the culture dominant there.

The classification given here does not presume to do more than touch fundamentals. The field as a whole has been but superficially examined and the material available for study while representative is quantitatively inadequate to permit a more detailed scheme. Eventually, such large classes as Lake Michigan or Upper Mississippi pottery will probably be found to include numerous subtypes with culture status. An initial plan is needed to facilitate and guide future work, and it is hoped that the framework here presented will serve the local field in such capacity. The terminology may serve in Wisconsin until increased information shall render possible a more suitable one.

MILWAUKEE PUBLIC MUSEUM,
MILWAUKEE, WISCONSIN

NAVAHO TREATMENT OF SICKNESS: DIAGNOSTICIANS

By WILLIAM MORGAN

WHEN the "family remedies" of a Navaho Indian give no relief, he consults a diagnostician, of whom there are three kinds: men (or women) "with motion-in-the-hand," stargazers, and listeners. These diagnosticians are consulted about sickness, dreams, and any unusual happening; they are asked to provide means of warding off dangers, and are summoned to advise about the recovery of lost horses, sheep, and money. [B, E, H, K, P, t, d, f, i, p.][1]

A definite distinction must be made between shamans and diagnosticians. The Chants conducted by shamans comprise the religion of the Navaho. Legends about these Chants are transmitted orally from generation to generation among the shamans. These legends describe how the gods revealed the Chants to the Navaho and sometimes contain specific instructions about the preparation of ceremonial paraphernalia and sand paintings. Diagnosticians do not use sand paintings or masks, nor do they possess tribal legends about their work. The collecting of medicines and the preparation of material ("cigarettes," kethawns, etc.) for a Chant is an extremely complicated procedure. A diagnostician may or may not observe similar restrictions according to his own inclination. During a Chant, the words of a song and the ritual treatment of a patient on a particular sand painting may not be altered; whereas, the diagnostician may make his own songs and minor rituals and may vary them at will. The shaman has no technique for discovering the cause of an illness, and wherever the cause is obscure, the shaman will not know the cure. A diagnostician, however, will reveal the cause and will prescribe the cure. C, a shaman, consulted two diagnosticians about a recurrent dream which was making him sick. The diagnosticians told him the particular gods who were causing the dream, and why they caused it, and what Chant would remedy his condition. The

[1] Capital letters denote Navaho informants. Small letters denote white informants. The writer possesses personal information of and from informants and his work on the Reservation could not proceed satisfactorily unless he disguised his sources. Also by inserting informants he can prevent his statements from sounding like tribal generalizations. He is primarily concerned with a study of individuals; that is, a study of the physiological and psychological factors in the individual's internal and external environment which condition the individual's behavior and ideas.

apprenticeship of a shaman's assistant may last fifteen years, depending on his ability to memorize verbally and visually. A diagnostician's apprentice may be ready to practice in a few months. A shaman must not cut his hair and must be fully initiated into the tribe. Neither of these conditions is required of a diagnostician. These are the most important distinctions between shamans and diagnosticians. [C, E, G, P, B, c, d, f, i, m, o, t.]

In cases of sickness the diagnostician is called upon to give the cause of the sickness and to say what ceremony will cure it, and what shaman can give that ceremony. If the sickness is not serious, the diagnostician will undertake to cure it himself. The ability to diagnose is not inherited, but must be proved during an apprenticeship, and psychological abnormalities do not qualify an individual for this work. [E, B, K, t, i.]

The cause of a sickness is revealed when the diagnostician is in a trance, therefore diagnosticians must first prove their ability to trance and then serve an apprenticeship under a practicing diagnostician. From him they become familiar with his medicines and learn his songs, prayers, and short rituals. [C, E, P, t, d.]

From the point of view of the everyday life of the Indians, too much interest should not be centered upon the shamans and their ceremonies, which may take from one to two hundred hours according to the desire and especially the pocketbook of the patient. When it is realized that three hundred and fifty dollars will support a family of five in comparative comfort for one year [t], the cost of a "serious" sickness is also a serious financial burden upon patient, relatives, and friends because a nine-night ceremony will cost a minimum of eight hundred dollars. A Night Chant cost t fifteen hundred dollars, and A paid a similar amount for his Mountain Chant. On the 25,000 square miles of the Reservation, it is doubtful if the "40,000" Navaho hold more than thirty of these nine-night ceremonies between the first frost and the first thunder.

Before proceeding further, it should be stated that the writer did not use an interpreter. One trial with a friend who "knew Navaho before he could speak English," demonstrated that it was impracticable. There is a curious concentration on the interpreter, and toward him each person is oriented. Notes taken on such a conversation resemble interchanges of telegrams. An interpreter can get parcels of specific information but the presence of a third person blocks the development of a personal conversation. And it must be understood that the writer did not "interview" an Indian. The writer gave as much information as he received. In other words he "swapped" white men's dreams, visions, trance material, superstitions, customs, rituals, and certain "treatments" commonly used by white doctors.

The following is a preliminary description of the three diagnostic techniques and a discussion thereof.

The first description is a paraphrase of E and P. P is a practitioner of motion-in-the-hand, whose father was a shaman and whose brother is a stargazer [t]. The man with motion-in-the-hand enters the hogan of the patient. Friends and relatives are present and the sickness is discussed. (These discussions are important in order to estimate their effect upon the prognosis.) The diagnostician seats himself facing the patient. He closes his eyes. He holds out his arm. He thinks of all the possible causes of the illness. When the "correct" cause "comes to his mind," his arm involuntarily shakes.[2]

When the diagnostician's arm has shaken, he lowers it. He then tells the cause of the sickness to the patient. Sometimes it is necessary to locate where the sickness is in the body. When his arm is extended toward the "correct" part it will shake. This is a skeleton of the procedure. Other details should be noted which vary with each diagnostician. He smooths the sand between himself and the patient, and sits down. On the sand he makes signs. From one of his buckskin or calico bags, he takes out reeds, or stones, or sticks. He may paint them in various designs with colored clays. He orders these on the sand in front of him. He may sprinkle them with corn pollen or corn meal. He may arrange on the ground certain stones or arrowheads which he has previously prayed or chanted over. He holds in his extended hand a special stone, pollen, object, or corn meal. He may chant or

[2] Washington Matthews (AMNH-M 6, 1902) relates in his translation of the myth of the Whirling Logs (par. 722) that the visionary or prophet "fell upon the ground in a fit" when a Fringe Mouth and a goddess entered in masks. "The yei dragged his shaking body to the north of the central fire, and laid it, head to the north, face to the east. They rolled up the pictured cloud and laid it away on the shelf. At the same time the two divinities whose entrance caused the convulsion, departed." The inference seems to be that the god and goddess cast a spell on the visionary which was made manifest by involuntary shaking.

In paragraph 491–494, Matthews describes the procedure of the Night-Chant: "He [the patient] has a single breath-feather, taken from the shoulder of an eagle, tied in his hair. As soon as it is tied on he begins to tremble violently (or should tremble) as if under the influence of a hypnotic spasm. . . . When the gods [Indians impersonating gods] leave for the last time the patient ceases to be convulsed, rises, and leaves the lodge.

"This rite is not only therapeutic but diagnostic, in a mythic sense. If the patient is seized with trembling, which is usually the case, the shamans say they know the malady is caused by the gods casting a spell on the patient; but if he is not thus seized they must seek some other cause."

Based upon P's description, one might make the assumption that the diagnostician with-motion-in-the-hand can call forth a spell (trance-state) from the gods, during which the gods will make known to him which one of many possible diagnoses in his mind is the correct one.

pray. Then with his arm outstretched he closes his eyes and enters a trance state. Through the mind of a man with motion-in-the-hand runs a series of visualizations of the illness and of the cause of the illness, whereas the listeners receive auditory manifestations. These men believe in their ability to diagnose, because the trance-state seems unusual and real, the more so in that the visions come to them when they are oblivious of external stimuli. Such visions carry the usual conviction of truth. The reason that men like C and E failed in their attempts to become diagnosticians, appears to be that they could not withdraw sufficiently from conscious awareness to allow any stream of unassorted ideas to pass through their mind, or for a picture to form itself. In a recent case of sickness, P, by motion-in-the-hand, diagnosed the causes to be maltreatment of an eagle and neglect to bury some one properly. The patient replied that, sixteen years before, a man had trapped an eagle and given it to him. He had held the eagle under his feet while pulling out the feathers. The eagle had bled. [It has been often recorded that eagle feathers are used ceremonially, but legends state that the feathers must come from a live eagle and the eagle must not be harmed or remain in captivity.] Eight years ago the patient said he had buried a man who was not properly clothed, and he had not properly prepared the grave. It is important to note that if an Indian is over forty years old, the probability is that he has handled a live eagle and in so doing he has maltreated it. Secondly, the ritual of burying is so complicated that no Indian is likely to say that he has complied with all requirements. These, then, are diagnoses almost sure to be accepted by the patient. And such diagnoses are commonly used by "mediums" among white men who describe the person who is communicating a message in such general terms that members of the audience can readily supply specific details and identify the person as a friend or relative. These comments tend to show that this diagnosis was not done by means of a trance. I am not prepared to deny this. A brief critique of P is relevant. This man is approximately fifty years old, is married, has three children and is a university graduate. He is of medium height, stout, and careless about his clothes. He is readily fluent in speech, both Navaho and English. This deterred me from asking questions which would give him a chance to expand his answers. For example, I suspected that if I asked him what a man with motion-in-the-hand did when called to diagnose, he would reply with a description of what he himself did, including therein all that he had ever seen or heard from other diagnosticians as well as stargazers and listeners. He watched me closely and was sensitive to my reactions. This confirmed t's warning that he would tell me what he thought I wanted to hear. The result was that I increased my attitude of

indifference and asked specific questions. Shifting the conversation from one phase of diagnosis to another, or from one type of dream to another type lessened the chance of his manufacturing an answer. Nevertheless some suspected dramatic fictions were deleted from memory before his conversations were privately recorded. He takes an active part in the Mountain Chant dances. His levity does not extend to his work. Occasionally in a diagnostic trance he has seen a man or woman, but too vaguely to identify them. This vagueness of identity is characteristic of the controlled white man's trance, where human figures are invariably generalized and impersonal. The diagnostician assumes that the man or woman of the trance has caused the illness of the patient by witchcraft, and it is therefore important to identify this person. With the help of the patient, family, and friends, this usually is not difficult. Some believe that when the patient by means of a ceremony is freed from the witch's spell, this influence will return to the witch and cause him or her to be sick. [P,i.] P states that twice he has had the patient get well and the bewitchers have died within ten days, and in a third case death has come after a longer period; "the bewitcher usually dies of heart trouble and generally from a hemorrhage." If true, these should not be dismissed at once as coincidences. Psychological phenomena produce in the Indian extensive physiological affects, as they do in the white man.

The technique of the stargazer as given below is a close paraphrase of E's description and corresponds essentially to those of P and t who has a moving picture of part of the procedure.

A man is sick. A stargazer is called in. He comes into the hogan.[3] The patient is there. Others are there. He talks to the patient and others. They discuss the illness. The fire is put out. The stargazer chants, then he says, "Everyone must close his eyes. No one must move or speak. Everyone must concentrate on the illness and try to see something." The stargazer takes a man from the hogan, and walks away some distance. He performs movements with his body. Any horses or sheep are frightened away. When there is no noise, the stargazer places a crystal or stone on his hand. He chants. He prays to the Gila monster. He does not pray to a lizard, but a lizard beyond the lizards, a larger one. Then the stargazer holds out his arm and hand in line with the moon or some star, and gazes unwinking at the crystal. Soon he sees something. He closes his hand upon what he has seen in the crystal. Also there may seem to be a line of light which is "lightning" from the star to the crystal or to the ground around him so that the

[3] Cosmos Mindeleff, Navaho Houses, BAE-R 17: 475–517, 1898.

ground appears light. The stargazer sees the hogan and the sick man, even though his back is turned to it. [P asserted, without being questioned, that when the patient was seen in a trance he was naked, whereas in reality the patient was sitting fully clothed in the hogan. This is a familiar phenomenon of white men's trance imagery.] He sees a man, or a bear, or a coyote, or perhaps the head of a coyote, or perhaps the bear is biting the patient. Then he goes back to the hogan. The fire is lighted. He asks what the others have seen. This is talked about. He tells what he has seen. Maybe it is a man. Maybe the man is a witch and is making the illness. He must find out who the man is. Maybe it is a coyote. The stargazer puts marks on the floor of the hogan. He lays down a handkerchief. He lays a piece of turquoise, maybe a special stone, maybe a bit of pearl, on the handkerchief. He makes a bag of the handkerchief. He chants and prays. He gives the bag to a man. He tells him to go in a certain direction until he finds a coyote track. He must see how fresh it is, what the coyote was doing, what direction he went. He must open the bag and lay it on the tracks and carefully arrange it in order. Then he must return to the hogan. If the coyote track led away from the hogan, the patient will get well. If the illness is serious the stargazer will prescribe a ceremony and the shaman who can give it.

The frequency of such remarks as, "If the coyote track led away from the hogan, the patient will get well," is not known. One is inclined to believe that the Indians are well aware that the track must inevitably lead away from the hogan but, like white people when sickness is present, the impulse to think for the best is dominant.

The third group of diagnosticians, the listeners, apparently are less common on the Reservation, though the Winds, as bearers of messages, are frequently mentioned in the Chants and Origin Legend (Washington Matthews). Their methods resemble the stargazers except that, when they leave the hogan and take up a position, the diagnosis which comes to them is auditory. [t,P,E,i,d.]

One other phase of diagnosis should be mentioned; a case of a woman with-motion-in-the-hand ascertaining what ceremony would cure her own sickness. At A's Mountain Chant, t and I heard a chant going on in the "medicine-hogan" on the last afternoon of the ceremony. We tried to enter, as did some Indians, and all of us were told not to interrupt it. We learned that a certain woman with-motion-in-the-hand was diagnosing. Three days later, t asked her to tell him about it. She said that earlier in the summer with a group of Indians she had gone to California under contract with a motion picture company. One day the director asked them how they liked

the meat which he had given them the previous night. He said it was bear meat. Since the bear is sacred to the Navaho, they were greatly disturbed. She tried to vomit but it was too late. Later when she came back to the Reservation she had severe rheumatism. The cause of her illness (eating bear meat) was obvious to her, but she did not know what ceremony would cure it. The six shamans at A's Dance agreed that she should come into the hogan and they would assist her by chanting. During the last three years she had lost her ability to diagnose by motion-in-the-hand and she was uncertain that she could do it. She seated herself in the hogan naked above the waist. She held out her arm. After a few minutes everything went black and she knew nothing. Then she saw two of the Yei gods, who appear in the Night Chant, and she knew that she would never completely recover from her sickness until a Night Chant was held for her.

This illustrates an important responsibility of the diagnostician; namely prescribing the proper ceremony and sometimes naming one or more shamans who can give it. In the case just cited, the proper ceremony was obtained by a trance but if the sickness resembles a case which the diagnostician knows was cured by a certain Chant of a certain shaman he will prescribe these to his patient. [C,E,P,t,i,B.] In the earlier days of the tribe many Chants existed, more than sixty according to that distinguished authority, Father Berard Haile, but most of these are now forgotten.

Recommending a ceremony is obviously less difficult at the present time and for the most part the Night Chant, the Mountain Chant, the Shooting Chant, the Bead Chant, and the "War Dance" suffice for the various physiological and psychological disturbances.

From the foregoing, the trance appears to be the only constant of Navaho diagnostics. Comment is therefore relevant because the word "trance" is vague and tainted in western civilization. A relative idea of the trance may be gained from the following sequence of manifestations which show the participation of increasing increments of consciousness: dreams, certain hallucinations and delusions, hypnagogic visions, certain involuntary visions, trances, phantasies, and day-dreams. The previous description of a woman's self-diagnosis might be interpreted as an involuntary vision. Having been present when she described it, I find reason to believe that she exaggerated. The blackness, the sudden vision, suggests loss of consciousness. Anything revealing itself under such conditions would be more highly valued because of its mysteriousness than in the usual controlled trance during which the diagnostician is aware of the equilibrium of his body. On the other hand, all my information concerning listeners seems

to imply the occurrence of mere akoasms[3a] which were translated by the mind into plausible "hunches." Listeners are uncommon but presumably some exist who receive verbal messages. It should be noted that none of the diagnosticians lie down when trancing. Hypnagogic visions are thus forestalled, but there is tense concentration upon the patient and his sickness. Innumerable have been the attempts to elucidate trances. Two references are here sufficient: one from the Irish Free State, "The Candle of Vision," by "AE"; and one quotation from Tibet,[4]

> May the consciousness undistractedly be kept in its natural state;
> Grasping the true nature of dreams, may I Train myself in the clear Light of Miraculous Transformation . . . .

Such references are unsatisfactory, to say the least. The work of Jung must therefore be introduced. His experiments began twenty years ago, and one fragment of a trance has been published in Two Essays on Analytical Psychology.[5] A brief recapitulation of his work is necessary, the more so since it contains important implications in the field of anthropology. Jung's concept of the collective unconscious was assumed in order to interpret dream material of 1909. This material contained images which are found in myths, and images remote from the experiences of the patient. Therefore the "unconscious" was divided by Jung into the personal unconscious which contained "all those psychic contents which are forgotten during the course of life, and all subliminal impressions, and perceptions which have too little energy to reach consciousness, and all psychic contents incompatible with the conscious attitude"[6] and the impersonal (collective) unconscious, the contents of which "appertain to a group, nation, or mankind and are not acquired during the life of the individual".[7] That these impersonal contents occurred in the dreams of an individual at a certain moment in a certain situation seemed to indicate that their interpretation would be of value to the patient. Familiarity with myths thus became the first requisite, and

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[3a] Dr. William A. White in his Outlines of Psychiatry (Nervous and Mental Disease Publishing Co., Washington, 1929), defines on p. 78 the word "akoasms" as follows:

"Auditory Hallucinations.—When these are elementary, that is, are largely sensory in character with few associations, they are known as akoasms. Such would be simple sounds, as buzzing, crackling, ringing, and the like. The more complicated hallucinations which are conceived by the patient to be "voices"—verbal auditory hallucinations—are known as phonemes."

[4] From W. Y. Evans Wentz, Tibetan Book of the Dead, quoted by I. A. Richards in his Practical Criticism, p. 235, 1929. Harcourt Brace & Co., Publishers.

[5] Pp. 246, 247. Dodd, Mead, 1928.

[6] Contributions to Analytical Psychology, 259, 1928. Harcourt Brace & Co. Publishers.

[7] *Ibid.*, 260.

subsequent interpretation was aided by comparing one myth with others especially where there was a duplication of symbols and symbolic acts. Quite properly there is and will continue to be a controversy over the interpretation of such material, but no one denies the existence of this imagery in the unconscious of men. When a man with-motion-in-the-hand describes trancing it is difficult to distinguish his meaning from Jung's words:

a vision, which by intense concentration, was perceived on the background of consciousness, a technique that is perfected only after long practice[8]

He also agrees with C and E that not everyone can succeed, and the "long practice" is similar to the Navaho's apprenticeship. Jung has remarked that if once the resistance to free contact with the unconscious can be overcome, and one can develop the power of sticking to the phantasy, there the play of images can be watched, and the creation of myths takes place. This requires the same concentration which P describes as being necessary for the diagnosis of sickness. Futhermore Jung's material has called forth the following conclusions:

I have to declare that these facts are psychic factors of indisputable effect. They are not the discoveries of an idle mind, but definite psychic events. They obey absolutely definite laws, and have their own law-determined causes and effects, which accounts for the fact that they can be demonstrated just as well among the most varied peoples and races living today as among those of thousands of years ago. As to what these processes consist in I have no theory to offer.[9]

These statements contain the implication that medicine, magic, or religion may have many independent origins, and it is with renewed critical interest that one looks back upon such statements as G. Elliot Smith's,

it was not until August 1918 that Dr. Rivers admitted the Egyptian origin of civilization—after three years of discussion and critical examination of the evidence.[10]

Diagnosticians have a god of their work, to whom they pray. [E] It is the Gila monster, or more accurately, the spirit of the Gila monster. E says there is no ceremony given over to this spirit, but mention of it is made in several chants and he thinks there is a Gila monster mask used in one of the dances. A man may hear the voice of the Gila monster. White men have no illusions about the spirit of this lizard but their delusions about the reptile itself, based upon "observation," cover a wide range of imaginative zoology. "Its teeth are hollow and are filled with poison." "It ejects poison into its mouth." "If turned on its back its bite is not poisonous." "It has no cloaca but evacuates through the mouth,"etc. Many believe it is not poisonous.

[8] Two Essays on Analytical Psychology, 246.

[9] *Ibid.*, 246.

[10] W. H. R. Rivers, Medicine, Magic and Religion, 90, 1924. Kegan Paul,Publishers.

Diagnosticians unlike the shamans may practice throughout the year but with certain limitations. Since these men and women do not work with masks or other representations of the gods, the use of which is forbidden between the first thunder and the first frost, it is probable that their work is but little curtailed, although they cannot mention the sacred names of the bear, snake, and lightning except in the winter when these latter are "asleep and cannot hear."

During any discussion of diagnosticans, it should be borne in mind that individual Navaho also have "home remedies." If these fail or the element of fear is present, the patient seeks the advice and ministrations of a diagnostician. These minor sicknesses need not involve a trance diagnosis but merely dispensary and outpatient treatment. However much space is here allotted to secondary factors in the Navaho treatment of sickness, it is assumed that only on rare occasions does a patient escape from a shaman or diagnostician without at least one sweat-bath, emetic, or cathartic. These are the more efficacious because Indians are apprehensive of physical ills and are not in the habit of delaying treatment. This comment will be challenged immediately by almost anyone who has talked to a white Reservation doctor or nurse. These latter show unmistakable signs of exasperation with the Indian and the reasons which they give speak for themselves: (1) Indians frequently do not come to a hospital until all efforts of shamans have failed. (2) Indians stop coming for treatment after preliminary improvement. This is especially common with trachoma cases. (3) Indians seriously sick and not improving will often be removed from the hospital by friends and relatives and taken to a shaman. (4) In view of the fact that incision is not practiced by the tribe, it is difficult to persuade an Indian to have an operation.

Sometimes a diagnostician will formulate his own ideas of physiology and how his medicines work which must be most convincing to his patients and enhancing to his reputation. P, a graduate of Haskell, has a theory that sickness is very often in the heart and that it spreads to the head and all parts of the body. It may be in the stomach and may spread to the head. Similarly, he says his medicines will permeate through the body and will cure everything including pneumonia, tuberculosis, gonorrhea, and heart trouble. First he gives an emetic which empties the "stomach and lungs," then he gives a cathartic. He collects his herbs from special places and all but a few he boils and administers internally through the mouth. For burns and sores, he has some moss which he burns and applies to the damaged area after which it is covered with tallow. Sometimes it is the habit to cover sores with the sap of resiñous trees. For sprains and lameness certain roots are used; these may be boiled and applied, or they may be chewed

by the diagnostician or patient and together with saliva rubbed into the skin. He displayed a carefully wrapped object which looked like a dried root. He said this was his most powerful medicine. He had had it for a long time and gave certain patients a few particles of it boiled in water. It would cure anything. He said it was the penis of a buffalo. Whether it was or not, I could not determine, but several Indians said that a buffalo's penis was known to be "strong medicine."

Even though these medicines may or may not be sung over, their association with other objects in the possession of a diagnostician would make them unusually powerful, and in addition P said he had collected special ones from particular places. The writer does not know whether certain herbs have become standardized remedies and whether an herb used for sore throat must always be collected near a spot struck by lightning. Such prescriptions undoubtedly vary with each diagnostician unlike the rules for gathering ceremonial medicines. Nor was it ascertained how much the shamans trespass upon the diagnosticians' field of short chants and prayers for minor sicknesses. If a patient asked a shaman for medicine to cure a stated illness, no doubt the shaman would give it, but apparently he has no technique for discovering what the illness is or how it was caused. A diagnostician, however, may identify a certain sickness with the malevolence of a certain god, in which case the ceremony would be prescribed in which this god is prominent. It was not determined how many names there are for sicknesses nor the nature of the names. F's letter to her relative said that a man with-motion-in-the-hand had diagnosed their cousin's pain in the side as "air and devil sickness" and had prescribed a Night Chant. Presumably, diagnosticians invent names for sicknesses and probably different gods and spirits can cause the same sickness.

There remain four other functions of diagnosticians; oneiromancy, advice about unusual incidents, provisions for warding off dangers, and help in the recovery of lost possessions.

The first three of these categories may be accompanied by physiological disturbances, which occasionally fall within the conditions defined by Dr. William A. White as "catastrophies" and "disasters."

Diagnosticians are called upon to cure sickness caused by dreams or to prevent sickness predicted by dreams. Indian informants did not hesitate to distinguish good dreams from bad dreams, nor were they reticent about telling their dreams. P said that if the dream is not serious, the individual may pray at dawn in his doorway with or without some special stone before him which has been chanted over for this purpose by some diagnostician. He may pray to the sun-god (whom C considers the "highest god"); or he may pray to a particular god or spirit of some animal made manifest by the

dream. If the dream be more serious, he must go to a diagnostician who will use his chants, and minor rituals, and more powerful objects and prayers. If the dream be still more serious, the diagnostician will advise a ceremony by a shaman. The writer wishes to stress the importance which his informants gave to their dreams as factors in their everyday life. A discussion of these dreams cannot be handled within the confines of this report. Suffice it to say that dreams carefully interpreted with related conscious material are indispensable for an understanding of individual Indians.

Another function of the diagnostician is the warding off of dangers. In addition to his necklace and the chamois bag containing special stones and annually renewed pollen which Navaho acquire at a certain time in their protracted initiation, P carried additional bags containing particular stones and pollen. One stone was four inches long, flat, narrow, black, and smooth. The bag was made to fit it. Part of it was supposed to resemble a horse's hoof. This stone had been sung over and protected him from being killed by a man. Some Indians carry an arrowhead for this purpose. Both he and his wife were very much afraid of lightning, in fact once he had nearly been struck. Each had a ceremony held to protect them from lightning and each carried a piece of white shell and a piece of turquoise strung together on a cord with particular knots. This also had been sung over and if a storm came, he could go outside his hogan and the lightning would proceed no further. The different kinds of lightning have often been recorded as well as the belief that when the Thunder-bird shoots his arrow it is straight lightning whereas the Chief Snake makes zigzag lightning. P stated that an object which protects from lightning also protects from snakes and so long as he carried his shell and turquoise a snake might enter his hogan but it would not bite him. Thus most of the stones which are carried are aniconic and are not fashioned or marked in relation to their use.

A diagnostician may also be called in to protect a hogan from lightning. P called my attention to a bunch of mistletoe over his door and twigs from species of trees at the south, west, and north of his hogan under the roof, which were placed there during a chant to prevent lightning. He protects other people's hogans from lightning by chanting, praying, and setting upright in the hogan to the east, south, west, and north an arrowhead or a small stone shaped like a miniature menhir. He then chants and prays. His sets of arrowheads and stones are of four different natural colors. A black arrowhead is placed to the east, a blue one to the south, a yellow one to the west, and on the north side a white one is set up. In the same bag with these stones were more than thirty others of miscellaneous shapes and colors. The innumerable uses which these may serve were not recorded.

Diagnosticians are called in about lost money, horses and sheep, and in fact about lost children.

A child wandered from X and was lost. The advice of a shaman,[N], was sought. His advice was without results. Stargazers, and men with-motion-in-the-hand were asked to advise where the child was. Each day search parties went out as directed. On the seventh day a listener was called. After a preparatory ritual of chants and prayers, he went to the top of a near-by hill. It is uncertain whether he heard voices, or sounds in the air coming from a certain direction. He returned to the hogan, however, and said the child was in a specified canyon one mile from its mouth. A search party failed to find the child, but went again, and this time found the child at a distance of about two miles. This eight-day search was remembered by t, who had inspected the spot where the child was found and decided she had been cuffed to death by a bear and cubs.

Two incidents have been described to me where diagnosticians recovered lost money, and in another case, a lost horse. These stories contained too little verifiable detail to be worth repeating. It may be expected that because of a little experience in such matters and a training which gives more than average awareness, these diagnosticians would naturally be consulted. Probably their work covers a still wider range of the daily life of the individual.

Rituals and words, spoken or sung, to cure sickness caused by dreams, witches, and the spirits of animals, gods, and dead men have been tenaciously preserved by the Navaho and ably recorded by anthropologists. Further research of these rituals and beliefs lies in the field of racial psychology and involves a study of the conscious and unconscious processes of individuals. Non-academic psychology necessarily remains affiliated with hospitals and it seems probable that an anthropologist will obtain his most dependable information through the investigation of psychopathic cases and organic disorders, because so many of the latter are psychogenic, and because a sick man is invariably less reticent than a man who is not sick. Work in this field seems to fall into three phases: the collection of data, including the investigator's contact with informants for which no university degree can ever prepare a man; the evaluation and interpretation of material which is conditioned by the investigator's understanding of his own psychological processes; and lastly the generalization of conclusions, which is the most difficult phase since it involves the method of successive approximations, which Archimedes aptly called the method of exhaustion. One adequate lead-in for such research, the work of diagnosticians, is outlined in this report.

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ALFRED PERCIVAL MAUDSLAY[1]

By ALFRED M. TOZZER

CENTRAL American insurrections may have some purpose after all. It was a revolution which prevented John L. Stephens from carrying out his diplomatic commission under President Van Buren in 1839. Instead he turned to exploration, and his four volumes on the Maya ruins have been the main incentive which stimulated the interest of other explorers and investigators. The greatest of these was Alfred Percival Maudslay.

Dr. Maudslay was born on March 18, 1850, at Tunbridge Wells, the son of Henry Maudslay of Woolwich, a famous English engineer and inventor, "one of England's finest craftsmen." He married Anne Cary Morris, of Morristown, New Jersey, a granddaughter of Gouverneur Morris, a member of the Constitutional Convention. She died in 1926. In 1928 he married Mrs. Purdon, of Fownhope, Hereford, who survives him. Surrounded by his flowers, Maudslay died on January 22, 1931, at his beautiful estate, Morney Cross, Fownhope, near Hereford, on a slope above the Wye river commanding a view of Hereford Cathedral and in the distance the Black mountains of Wales.

His education began at Harrow in 1863 and continued at Trinity Hall, Cambridge, from which he was graduated in 1872, where he gained a second class in the Natural Sciences Tripos. At school he tells us he was called "a barren tree" and "an arid desert." The untruth of these statements was soon shown.

Immediately after graduation, with a "great desire to see a tropical forest," he set sail with his brother for the West Indies. He visited Panama and traveled through a part of Guatemala, sailing from Acapulco to San Francisco. On a stage trip to the Yosemite he met Miss Morris, who later became his wife. He was in New York when Grant was elected, and came to Boston to see the smoking remains of its great fire.

In 1873 he visited Iceland. It was about this time that he gave up, on account of health, his first ambition to study medicine. The next year he again visited the West Indies with the intention of growing tobacco in Jamaica. A rigid quarantine compelled him to continue to Trinidad, where he entertained the idea of starting as a cacao planter. A fellow passenger to Trinidad was the newly appointed Governor, William Cairns. To fill a temporary vacancy he accepted the appointment as His Excellency's Private

[1] I am under obligations for aid in writing this memoir to Mrs. Arthur Laughton, H. J. Braunholtz, Henry N. Sweet, Ingersoll Bowditch, and an obituary note by L. C. G. Clarke.

Secretary. The Governor soon left, never to return, and Maudslay followed him to London. Maudslay's love of the tropics induced him to continue as Secretary to Sir William Cairns, this time in Queensland.

In 1875 he joined the staff of Sir Arthur Gordon in Fiji. For the next five years he served successively as Acting Colonial Secretary of Fiji, Deputy Commissioner for Tonga and Samoa, and as Acting Consul-General for the Western Pacific. This period of his life is delightfully covered in his last book, Life in the Pacific Fifty Years Ago. His success as a colonial administrator was great. His kindly and sympathetic nature made him an ideal type to treat with the natives, and his name came near ranking very high in the history of the Pacific when he completed negotiations with the Samoan chiefs for the unreserved cession of Samoa to Great Britain. Unfortunately, a previous agreement between his country and Germany prevented any advantage being taken of his understanding with the Samoans.

His fame, however, which might well have rested on colonial administration, came from his archaeological investigations in Central America. He writes:

> The principal object of my first journey (to Central America) was not geographical or antiquarian research, but a desire to pass the winter in a warm climate. I had made no previous study of American archaeology, but my interest had been aroused by reading Stephens' account of his travels, and I started for Guatemala in the winter of 1880–1, in the hope that I might reach some of the ruins so admirably described by him. My success in this first trip was so much greater than I anticipated, that I returned to pass another winter in the country, provided with a larger photographic camera, and generally better equipped for the work.

This first trip in 1881 was the first of seven undertaken from 1881 to 1894, on the last of which he was accompanied by Mrs. Maudslay. He conducted these elaborate expeditions entirely at his own expense, together with photographing and casting. He writes:

> I was at a loss to know how best to make use of my notes and collections, when Mr. Godman kindly offered to relieve me of all the expense of printing and the reproduction of plates, and to publish my work as an addition to the "Biologia Centrali-Americana," if I would supply all necessary photographs, drawings and plans, and a written memoir.

From this happy arrangement we have the four monumental volumes of plates and four of text covering Maudslay's archaeological work. These volumes have never been equalled in the excellence of the plates, the accuracy of the plans, and the detailed studies of the architecture and the carefulness of the drawings of the hieroglyphic inscriptions, done under Maudslay's direction by Miss Annie Hunter.

No one who has not traveled in the Guatemalan bush, and has not had to deal with an outfit of mules and the meager supply of adequate labor can well appreciate half the difficulties encountered by an explorer in this region over forty years ago. There is very little mention of these terrific handicaps in Maudslay's text, and yet they were there. In those distant days there were no "tropical plates" and other aids devised for the explorer in warm countries. The search for chicle in those regions had not begun, and trails, however poor, had not been made stretching in a network over the country. Only on his last trip, made with Mrs. Maudslay and delightfully described by them in A Glimpse at Guatemala, is there a personal picture of his travels. His great modesty is shown in the title of the book and in the last chapter, which is headed "Conclusions (?)."

It is needless here to enumerate the ruins he visited, several of which he made known to the scientific world for the first time. His plans, drawings, and photographs of Palenque, Quirigua, Chichen Itza, and many of the lesser sites have never been superseded. He gives grateful thanks to H. W. Price, who aided him at Palenque and Quirigua, and to Mr. Henry N. Sweet, who was with him at Chichen Itza. Coming down the Usumacinta river, he was the first archaeologist to reach the ruins of Menche (Yaxchilan), anticipating by a day or two the arrival of Charnay, who came up the river. I know of nowhere in scientific exploration where magnanimity is better shown than in his attitude to Charnay, who hoped to "discover" the ruins in the name of his patron, Pierre Lorrilard. Let Charnay describe the meeting.[2]

> We shook hands; he knew my name, he told me his: Alfred Maudslay, Esq., from London; and as my looks betrayed the inward annoyance I felt: "It's all right," he said; "there is no reason why you should look so distressed. My having had the start of you was a mere chance, as it would have been mere chance had it been the other way. You need have no fear on my account, for I am only an amateur, traveling for pleasure. With you the case of course is different. But I do not intend to publish anything. Come, I have had a place got ready; and as for the ruins I make them over to you. You can name the town, claim to have discovered it, in fact do what you please. I shall not interfere with you in any way, and you may even dispense with mentioning my name if you so please." I was deeply touched with his kind manner, and I am only too charmed to share with him the glory of having explored this city. We lived and worked together like two brothers, and we parted the best friends in the world.

It was from this site that Maudslay took out several magnificently carved stone lintels which are now treasured possessions of the British Mu-

[2] The Ancient Cities of the New World, 435–6, London, 1887.

seum. At many of the sites he visited he took moulds of the bas-reliefs, and even of entire monuments by means of paper squeezes and sometimes of plaster. These were cast and presented to the Victoria and Albert Museum. After lying, entirely neglected, in storage for thirty years, and mainly through the energy and persistence of Captain T. A. Joyce, in 1923 they finally found a most suitable setting in the British Museum where they, together with the original lintels, and his other gifts, fill a hall suitably called "The Maudslay Room." This is the only hall in the entire Museum ever named for a man during his lifetime, and where the entire contents represent the work of one individual. Maudslay's casts are also to be found in the Trocadero at Paris, and in several American museums.

In 1891, through the initiative and aid of the late Charles P. Bowditch, another great patron and scholar of Maya research, the Peabody Museum of Harvard University had a ten year concession with Honduras to explore at Copan.[3]

In 1893–94, owing to the death of Mr. Owens, one of the archaeologists, no one was sent to the site by the museum, and Mr. Maudslay kindly consented to serve as its representative. In previous visits he had already examined the site, giving letters to the stelae discovered by him. While there in 1893–94, he completed the moulds of the inscriptions omitted from his earlier series and moulded others found by the museum.

Early in his studies of the Maya ruins, Mr. Maudslay was impressed with the great importance of the hieroglyphic inscriptions. He took special pains to photograph and mould, wherever possible, the hieroglyphs. From these Miss Annie Hunter made the famous drawings of the inscriptions which have been a boon to all students of this subject. With a very few exceptions, careful checking has failed to find inaccuracies in this remarkable work.

Cyrus Thomas in 1882 showed the true order of reading the inscriptions. Maudslay evidently did not know of this, as he wrote in 1886:

> I am of the opinion that the tables of hieroglyphs should be read *in double columns, from left to right and from top to bottom;* but I am not in this paper able to give fully the evidence on which this opinion is formed.

In 1890, he speaks of the Thomas paper of 1882 and writes:

> I myself came to the same conclusion from an entirely independent examination of inscriptions from Quirigua and Copan.

[3] In looking through the long and intimate correspondence between Mr. Maudslay and Mr. Bowditch, I find that Mr. Maudslay's advice was sought at every point in the plans and outfit of the early Peabody Museum expeditions to Copan. Furthermore, Dr. Gordon and Professor Saville, leaders of these trips, took over many of the Maudslay personnel.

As early as 1886 he recognized the formula of the beginning of many of the inscriptions, when he writes:

One of the most interesting points which I have noticed is that all the inscriptions which I have reason to believe are complete from the commencement, are headed by what I shall call an initial scroll (the type of which is permanent throughout many variations), and begin with the same formula, usually extending through six squares of hieroglyph writing. The sixth square, or sometimes the latter half of the sixth square, being a human face, usually in profile, enclosed in a frame or cartouche.

Part 2 (vol. 1) of the Biologia appeared in 1890, and on plate 31 he has a famous drawing, placing side by side the first glyphs of several inscriptions. These he names the "Initial Series" for the first time, and notes the difference between the inscriptions with numbers and those without, noting that the number in the first glyph is almost invariably nine. It is indeed probable that it was Maudslay who suggested to Goodman the possibility of the face numerals which Goodman later worked out. Maudslay also recognized the rosette form for twenty, and the double number on the Uinal glyph of what, later, was called the Secondary Series. He writes, in part, as follows:

It will be found that many inscriptions are preceded by what I propose to call a "heading." . . . . This heading is very frequently followed by what I propose to call the "Initial Series" of glyphs. There are two principal forms in which this initial series occurs. One is a series of six glyphs, each glyph composed of two characters—usually two heads without any numerals attached to them; the other is a series of six characters occupying six or a less number of glyphs, each character having a numeral attached to it. Each character in the single series is usually identical with one of the characters from the glyph in the corresponding position in the double or two-character series. In some cases there is a mixture of the two series. The initial series is to be found in inscriptions throughout Central America.

Not content with his own imperfect knowledge of the hieroglyphs, he was eager to find someone who would make the Maya inscriptions his life work. In a letter to his friend and fellow enthusiast, Mr. Charles P. Bowditch, dated at Guatemala, December, 19, 1892, Mr. Maudslay tells of his journey across the United States, first visiting the Chicago Fair and then San Francisco. He continues:

I think I told you that for some years I have been corresponding with a Mr. Eisen in San Francisco. He was away in Mexico when I first arrived but I saw a good deal of his partner, Mr. Goodman, and it is he, apparently, who has done most of the work at the inscriptions and not Mr. Eisen. It seems to me that he has really made some advance, and it is principally in the direction in which I anticipated that discoveries would be made, that is, in the comparative study of the "Initial Series" which he

finds gives him a date. I was not able to make any careful investigation of his system but from what I can see it appeared to work out correctly and I have done my best to get him to publish his method and the calendars which he has worked out.

This visit to Goodman resulted in Maudslay urging him to come to London to see all the material gathered in the field. This Goodman did in 1895. He writes in the preface to the appendix to Maudslay's Biologia:

> The appearance of this fragment now, in its unfinished state, is due to a request of Mr. Alfred P. Maudslay, who desires to have chronological tables . . . so that he may be able to refer to them during the course of publication of his magnificent work on the archaeology of Central America . . . .
>
> There is history attached to the printing of this fragment. Mr. Maudslay, during one of his visits to our coast, urged the importance of its publication upon some of the officials of the Californian Academy of Sciences; but . . . they could not clearly see their way to any excuse for assuming the cost of printing this little book. It remained for Mr. E. [F.] DuCane Godman and Mr. Osbert Salvin, of London, to invite the publication of it at their private expense, and to incorporate it, for all of its unworth, in their monumental work, the Biologia Centrali-Americana.

This is not the time and place to record the most important advances made by Goodman in the study of the Maya inscriptions. It is no doubt true, however, that to Mr. Maudslay and his work we owe indirectly the Goodman contributions.

The artistic side of the Maya carvings and bas-reliefs were of special interest to Maudslay. His analysis of the designs by colored drawings has been a unique contribution. Nowhere else do we find so clearly represented the intricate and confused designs of the Mayas. The drawings of the bas-reliefs at Chichen Itza and Palenque especially and those on the Copan and Quirigua stelae and altars are noted examples of Miss Hunter's careful work supervised at every step by Maudslay.[4] He also inspired Miss Adela Breton to spend many weary years copying the Chichen frescoes, and making reproductions of ancient maps of Tenochtitlan.

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[4] A worthy tribute to the late Miss Hunter, which I feel sure Mr. Maudslay would have liked to have included here, was paid by Goodman, who undoubtedly saw her at her work in London. In his preface he writes: "The illustrations in these pages are by Miss Annie Hunter, who has done nearly all the drawings for Maudslay's series of publications. Her experience and artistic skill render her reproductions faultless. The certainty with which she can trace the glyphs of a nearly obliterated inscription amounts almost to divination. No mere perfunctory discharge of duty satisfies her; her whole soul is in her work, aquiver with anxiety to attain the best and truest result. Students who have not had an opportunity for comparing the mutilated originals with her perfect restorations will never know the full debt they owe this admirable artist."

His interest in maps—of which he had a large collection—shows clearly in that of the peninsula of Yucatan, which he published in his Biologia. It is a compilation, laboriously assembled from many sources, and still stands as the best map of this region. This interest in maps comes out very clearly in his definitive edition of the old Conquistador, Bernal Diaz. His translation of this masterpiece, published by the Hakluyt Society, will stand as his second monument. The voluminous notes show the research scholar. The numerous illustrations and the volume of reproductions of ancient maps of Mexico and the environs of the ancient Tenochtitlan are contributions of the greatest value to early Spanish-Mexican history.

Mr. Maudslay exceedingly disliked controversies, and he declined to take part in them even when his views were challenged. The much heralded claim of Dr. G. Elliot Smith of Asiatic influence in Central America and the presence of elephants in the Maya area only once drew his fire. In a long article in the London Times of January 14, 1927, headed "Elephants or Macaws? Asia and American Civilization. A New Discovery," Dr. Smith made use of some discarded drawings of Waldeck, made almost a hundred years ago, which were discovered in a Chicago library. They were fanciful drawings of elephants at Palenque. It seems evident that Waldeck himself had little regard for their faithfulness, as he did not include them in his published work. The concluding sentence of Dr. Smith's article reads as follows:

> The definite settlement of the elephant controversy marks a revolution in ethnology.

This was too much for even peace-loving Mr. Maudslay, who had spent months at Palenque studying every carving and relief. He had compared all of Waldeck's published drawings with the originals and knew well their inaccuracies, and *he* had found no elephants at Palenque. Writing from Egypt, he sent the following letter to the London Times, which was printed on February 14, 1927:

> I have just now seen in "The Times" of January 14, the copies of drawings by F. de Waldeck of Maya sculptures at Palenque, which have been recently found at Chicago, and Professor Elliot Smith's letter in the same issue. At this distance from home, and with no books to refer to, it is impossible to go into details. However, if any of your readers will compare Waldeck's drawings with the photographs and drawings in the Palenque volume of the "Biologia Centrali Americana" (Archaeology), or the casts from Palenque in the British Museum, I have no doubt they will be convinced of Waldeck's inaccuracy and the worthlessness of his drawings in support of Professor Elliot Smith's views.

From the time he left off active archaeological field work in 1894, until 1907, he usually spent six months in Mexico. For several years he was at Zavaleta, near Oaxaca, working a small gold mine which he had inherited. His last year in Mexico was spent at San Angel. During the later years of his life he traveled in the Balearic islands, Spain, Italy, and Egypt.

The list of his honors is a long one. In addition to being Honorary Fellow of Trinity Hall, he received the Hon. Sc. D. from Cambridge and the Hon. D. Sc. from Oxford in 1912, in which year he was the President of the Royal Anthropological Institute and the Chairman of the Organizing Committee and President of the International Congress of Americanists in London. He joined the Royal Geographical Society in 1884, and was an Honorable Secretary for several years. He was also a member of the Council of the Hakluyt Society. An Honorary Professorship in the Museo Nacional at Mexico City was something of which he was always proud. He also held Honorary memberships in the Société des Américanistes of Paris, the American Antiquarian Society, the American Academy of Arts and Sciences, and the American Anthropological Association, and was a corresponding member of the Berliner Gesellschaft für Anthropologie. In 1926 he received the Rivers Memorial Medal of the Royal Anthropological Institute. He was also a leading figure in many of the Herefordshire local scientific and philanthropic organizations.

He bequeathed his valuable Mexican manuscripts, books, pamphlets, and a very extensive collection of ancient maps to the British Museum, and his Fijian collection to the Cambridge University Museum. The invaluable Gouverneur Morris papers which he inherited from his wife were left to the Library of Congress, Washington.

Mr. Maudslay was a man who was fond of simple things. He surrounded himself with a garden wherever he happened to live—in Fiji, at Zavaleta, and at Morney Cross, where, during the last years of his life, he spent hours planning and planting, weeding and pruning his flowering terraces. His wide interests included a knowledge of embroideries and of old furniture; he was an excellent photographer, and a keen fisherman. Without exception, Mr. Maudslay's pioneer work in Maya archaeology is the greatest single contribution to this study. Inspired by Stephens, he, in turn, inspired many others to select the Maya field for research and exploration.

His aim was perfection, and his published scientific works show that his ideal was accomplished. As a scholar, he refused to be satisfied with hazy generalizations, and sought the truth. His gentle nature, his retiring disposition, and his great modesty were outstanding characteristics. He was without guile. One can often wonder as to his reactions to the modern scientific

expeditions with their aeroplanes and motors, their staff of secretaries, moving picture operators, and, most necessary of all, publicity agents. His own splendid accomplishments were unheralded in the press, and were generally unrecognized except by a few faithful friends and fellow archaeologists until toward the last twenty years of his life. Mr. Maudslay's work can never be equaled. During the last forty years, time and man have worked havoc with the Maya ruins. Priceless records have now disappeared, but many of them are permanently recorded in the monumental volumes of the Biologia Centrali-Americana. And Maudslay's schoolmates at Harrow called him "a barren tree!"

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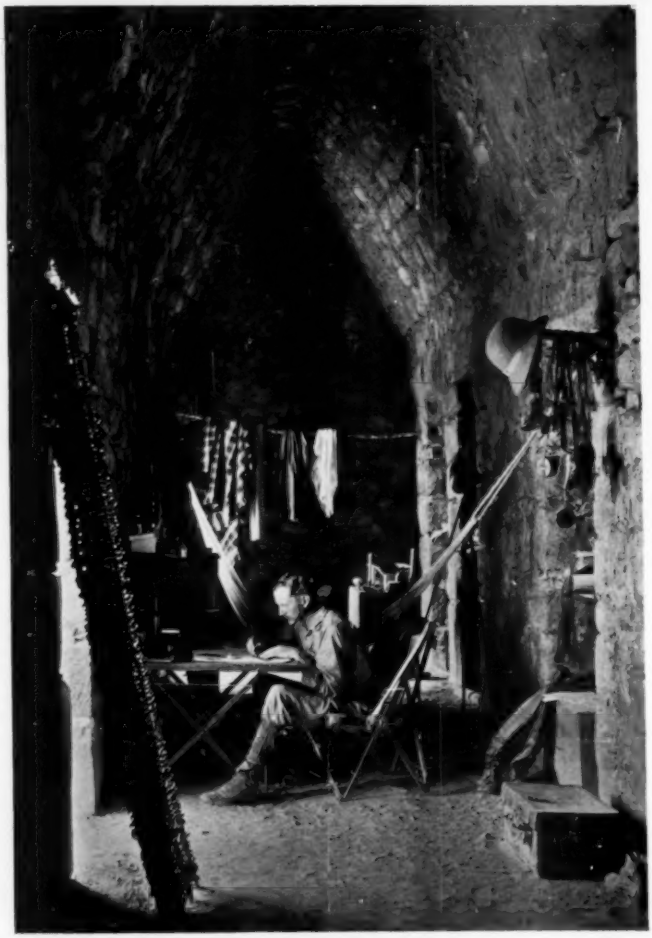

Dr. Alfred Percival Maudslay in "the living room" at the Monjas, Chichen Itza, Yucatan. (Photograph taken by Mr. Henry N. Sweet in 1889. Copies of this negative were kindly furnished both by Mr. Sweet and by Mr. Braunholtz.)

GEORGE A. DORSEY

By FAY-COOPER COLE

GEORGE AMOS DORSEY was born at Hebron, Ohio, February 6, 1868. After completing the public and high schools he attended Dennison College, Ohio. He graduated at the age of twenty, and twenty-one years later was awarded the LL.D degree from his *alma mater*.

After his graduation he attended Harvard University Graduate School, where he was awarded the Ph.D. degree in 1894. While still a graduate student he went to South America to gather collections for the Chicago World's Fair of 1893. Upon his return to the United States he became an assistant and instructor in anthropology at Harvard University. In 1896 he came to Chicago to accept a place with the recently organized Field Museum of Natural History. Two years later he was advanced to the position of Curator, which post he held until 1915. His boundless enthusiasm led men of wealth to endow expeditions to all parts of the world and under his administration the Department of Anthropology became one of the largest in the world.

Never content to be a mere administrator, he made many trips to distant lands and carried on extensive investigations, the best known of which are those relating to the Plains Indians. Following the publication of a diary of a world trip, he was commissioned by the Chicago Tribune to study the sources of emigration in Italy, Austria, and the Balkan states, as well as political conditions in South Africa and the Far East.

In addition to these many activities he found time to serve as professor of comparative anatomy in the Dental School of Northwestern University and also as associate professor of anthropology at the University of Chicago. During this period he published some seventy papers and several volumes dealing with anthropology. He likewise took an active part in the intellectual and social life of Chicago. He was twice elected as President of the Geographical Society and once of the Adventurer's Club. In the political campaign of 1916 he became an ardent champion of President Wilson and devoted a great deal of time and energy to the preparation of editorials for the Democratic National Convention.

With the outbreak of the World War he was commissioned a Lieutenant Commander in the United States Navy and was detailed as Assistant Naval Attaché at Lisbon. During the Peace Conference at Paris he served as advisor to President Wilson on Spanish problems.

Following the war, he served as correspondent for the London News and tried his hand as a popular writer. His love for science soon led him back to that field and he endeavored to make the findings of science available to and popular with the average man. After many discouragements he pro-

duced *Why We Behave Like Human Beings*, a volume which quickly became one of the best sellers, and which today has the greatest circulation of any modern book on science. This was followed by three volumes and a number of semi-popular articles on human behavior. At the time of his death he had just completed the manuscript of a new volume on *Civilization* which many competent critics pronounce his greatest work.

He was a member of many scientific societies in America and abroad and had received a number of honorary awards.

Few men in science have had such broad fields of interest; few have traveled so widely; and no one of our generation has done more toward popularizing science.

His death, which occurred March 29th, was sudden and entirely unexpected. Apparently in the best of health he was dressing for dinner when the end came.

All who knew him will feel a personal loss in the passing of a delightful friend.

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HERMAN FREDERIK CAREL TEN KATE

By JAC. HEŸINK
and F. W. HODGE

DR. H. F. C. TEN KATE died at Carthage, northern Africa, on February 5, 1931. He was born at Amsterdam, July 21, 1858. It was the desire of his father, the eminent artist who bore the same given name, that the son follow his profession, to which end he became a pupil of the Academy of Arts at The Hague, where he was awarded the first prize medal for an anatomical drawing. But a visit to the island of Corsica, when a mere youth, with one of his father's artist friends, developed his innate roving disposition. After due preparation in the classics, he became a student at the University of Leiden in 1877, devoting himself chiefly to medicine and natural science. Two years later he went to Paris to continue his studies and to follow the courses of Broca, Quatrefages, Topinard, and other leaders of the French anthropological school. While still a student he wrote, with his friend J. Pavlovsky, a memoir on the skulls of decapitated criminals and suicides. In the fall of 1880 ten Kate went to Germany, where he studied successively at the universities of Berlin, Göttingen, and Heidelberg. Some time after his graduation in 1882 he followed his taste for traveling by journeying to the United States, and the adjacent parts of Mexico, under commission of the Dutch government and of the Société d'Anthropologie de Paris. Since he was always an omnivorous reader of literature pertaining to the American Indians, it is highly likely that Frank Hamilton Cushing influenced ten Kate to undertake his studies of the tribes of the Southwest, for a visit to Zuñi during Cushing's residence there resulted in a warm friendship which never waned until Cushing's death in 1900. During his American sojourn ten Kate came in contact with about twenty Indian tribes, including Iroquois, Apache, Mohave and others of the Colorado river, Hopi, Zuñi, and Comanche. His exploration of the southern part of Lower California was one of the most interesting periods of his first great journey, which occupied fourteen months and resulted in a book of travels entitled Reizen en Onderzoekingen in Noord-Amerika (Leiden, 1885), to which additions and corrections, based on subsequent observations, were made in a paper entitled Verbeteringen en Aanvullingen van "Reizen en Onderzoekingen in Noord-Amerika" (Leiden, 1889). Other results of his Southwestern studies were various brief papers on the physical anthropology and ethnography of tribes encountered. In the summer of 1884 ten Kate accompanied Prince Roland Bonaparte and the Marquis de Villeneuve on their journey to Scandinavia and Lapland, and in the following year the Prince commis-

sioned him to visit Dutch Guiana, where he studied both the Indians and the Bush Negroes. He proceeded thence to Venezuela, crossed the eastern llanos, and in the summer of 1886 returned to Holland via the United States, visiting en route his old friends the Seneca, by whom he was subsequently adopted, and making a stay at Grand River reserve, Ontario. The winter of 1886–87 was spent in Algeria, and in October, 1887, he sailed for the third time to America, to join the Hemenway Archaeological Expedition as physical anthropologist at the invitation of Cushing, its director, then conducting excavations in the Salt River valley of Arizona. After a stay of about a year with the expedition, ten Kate departed for Mexico, thence again to Holland. In 1889 he published a work entitled A Foreigner's View of the Indian Question, and as an active part of the work of the National Indian Defense Association he raised funds in Europe for the Indian cause. In 1890, under the auspices of the Dutch government and commissioned by the Royal Geographical Society, ten Kate sailed for Java, and later explored the islands of Timor, Flores, Sumba (Sandalwood), Roti, and others, coming in contact with aboriginal peoples not hitherto seen by white men. The results of these travels added important information on anthropology, geography, and natural history. From the Indian archipelago ten Kate went to Australia, thence to the Tonga, Samoan, and Society islands of Polynesia. After a perilous voyage from Tahiti he reached Peru, where by pure chance he met his old friend Adolphe F. Bandelier, who had recently arrived to conduct archaeological researches for the American Museum of Natural History. Crossing the Chilean Andes under great difficulty in winter, ten Kate reached the Argentine early in 1893, where he was appointed curator in the Museo de La Plata and participated in an expedition to the Calchaqui region, where many ruins were explored and large collections gathered. He returned to Holland in the same year to publish the results of his travels in the Indies and in South America, at the same time resuming his medical studies at Heidelberg and Freiburg. In 1895 he returned to the Argentine, whence he traveled through Paraguay. Two years later he visited Java, and in 1898 went to Japan, where he lived eleven years, marrying in 1906 a Japanese lady of Yokohama, who accompanied him to Europe in 1909–13, when he returned to Japan to practise medicine at Kobe. Losing his wife in the influenza epidemic of 1919, he could no longer bear to reside in the Flowery Kingdom, so returned to his native land, broken in health. Later he took up his residence in Algeria, but made extended trips to Italy and France, ever pursuing his studies. Dr. ten Kate had no patience with modern progress, the mechanization of everything, nor with efforts made toward what he regarded as the despoliation of primi-

tive people. It was for the latter reason that he abandoned a plan to settle in Hawaii. He was possessed of a remarkably retentive memory, and although most of his life was spent away from the facilities afforded by civilization, he kept well informed of the activities of the anthropological world, especially of the progress of research in America; indeed little was published on the American Indians that was not thoroughly absorbed by him and often critically reviewed. In Paris he was known as "L'homme qui n'est jamais là, où est sa dernière adresse." His field collections help to enrich the museums of Leiden, Rotterdam, Utrecht, Paris, and Berlin. Speaking and writing with facility in eight tongues, and possessing a fine literary sense by which he came honestly (he was a nephew of Reverend J. J. L. ten Kate, the celebrated poet), he published articles and reviews in the journals of several languages and countries, but his most important contributions appeared in Dutch. Except during his last years when a serious cardiac affection made him welcome the end, ten Kate was a prodigious worker. His bibliography perhaps comprises 150 titles. The more important of these are included in the following:

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BOOK REVIEWS

METHODS AND PRINCIPLES

Etat social des peuples sauvages. PAUL DESCAMPS. (Paris: Bibliothèque Scientifique, 1930.)

In the introduction to this volume Mr. Descamps has outlined his theoretic position. He repudiates evolutionary schemes and stresses the need of a search for immediate causes. Analysis must precede synthesis. Phenomena must be studied in their context. The assumption implicit in his work is that economic factors mould social ones. In this he allies himself with a well established school of economic interpretation represented by writers like E. Grosse in *Die Formen der Familie und die Formen der Wirtschaft.* In addition, the author's avowed purpose is to place before French scientists a classified and commentated analysis of ethnographic works not always available. There are included definitions of terms, and among others savages are denoted as hunters, fishers, and food-gatherers. In this scheme Mr. Descamps has accepted the first subsistence stage of evolutionary anthropologists and economists merely as a classificatory device. The dangers of such a procedure are apparent later in the book. On the whole, however, the introduction prepares one for the clear and ordered treatment of data which characterizes so many French treatises.

In the light of such a preparation the mere perusal of the table of contents is somewhat disconcerting. The work is divided into three major parts: "The Natives of Australia," "Evolution by means of Terrestrial Transportation," "Evolution by means of the Canoe." The subdivisions of the last section will illustrate further the confusion of criteria of classification. We find "Fishermen without Canoes," "Canoes," "Advanced Fishermen," which last is again subdivided into such headings as "Peoples without Collective Totems from the Northwest Coast of America," "Collective Totemism of the Northwest Coast of America," "Paleo-Asiatics," "Kauralaig of Torres Straits." It is not to be wondered at that the reader is left puzzled and confused. It is impossible in fact to disentangle from a mass of briefly outlined material what is in theory an intended economic classification. Even when economic classification has been more closely adhered to, there exist strange juxtapositions. For instance, we find Tasmanians, Tierra del Fuegians, and Bushmen lumped together under the subtitle "Hunting Peoples of the South." Here apparently mere latitude, not even environment, is considered a classifying factor.

By far the most careful and detailed portion of the book is the first part, which deals with the Australians. The suggestions for the origin of social phenomena are often ingenious and fertile, if they are not always plausible. Matrilineal descent, totemism, cannibalism, etc. are accounted for in environmental, economic, and demographic terms. There is no necessity to describe and criticize here the theories propounded by Mr. Descamps, but anyone interested in Australia may well find them suggestive and stimulating.

On the whole, however, the value of the work is questionable. At most it fills

the function of giving a newcomer in the field of anthropology a rapid survey of a variety of peoples. The status of women has been stressed. The topical and subject indices are valuable aids in the use of the work for purposes of reference. Theoretical suggestions must be taken with caution, and the evolutionary terminology in all justice to the author must be largely discounted.

CORA DU BOIS

Weltgeschichte der Steinzeit. O. MENGHIN. (Vienna: Anton Schroll & Co., 1931. 648 pages.)

This is a big volume, one of the largest on the subject of prehistory. A careful perusal will disclose something more than mere bigness in its favor. As the title indicates, an attempt has been made to cover the whole world, but of course not everywhere uniformly. This would be impossible in the present state of our knowledge.

In regard to terminology, the author believes that changes are desirable and submits a list of these. He would scrap the term "Palaeolithic" and in its place proposes "Protolithic" and "Miolithic." The protolithic is made to cover the Eolithic and pre-Chellean (Early Protolithic), Chellean and Acheulian (Middle Protolithic), and Mousterian (Upper Protolithic). The lower Miolithic would take the place of Aurignacian, Solutrean, and Magdalenian; while upper Miolithic would replace the Mesolithic. No objection is raised to the Neolithic; it is subdivided into an early, or Protoneolithic, and a full, or Mixoneolithic, culture. For a late phase (transition) of each of these, the author would coin the terms: epiprotolithic, epimiolithic, epiprotoneolithic, and epimixoneolithic. For example, epiprotolithic would be a culture of protolithic rank, which reappears (or persists) in the Miolithic Epoch; and epimixoneolithic, a full neolithic culture reappearing in the Age of Metals. Where a culture jumps a stage, then reappears, Menghin suggests the prefix "opsi"; so that one might speak of opsiprotolithic, opsimiolithic, opsiprotoneolithic, etc. There is apparently no end to what might be accomplished along these lines by an author gifted in the coining of terms, but unfortunately there is a limit to what the student is willing to absorb. These new terms are not only proposed, but are also made use of throughout the book. It might be better to leave the matter of scrapping an old terminology for a new to an international committee on prehistoric nomenclature.

The author is not convinced that a culture antedating the Pleistocene has as yet been found in Europe. On the other hand, he is inclined to accept as artifacts belonging to the Pliocene or at the latest very early Pleistocene the so-called implements of bone reported from Nebraska by H. J. Cook. Thus does distance seem to lend enchantment to the view.

Each culture, beginning with the protolithic, is discussed as to its evolution and geographic distribution and with reference to the materials employed, such as stone, bone, horn, etc. Coming to the protoneolithic culture, it is thought that the animals domesticated had a prime influence on the nature of the culture. The author would divide the cultures based on animal husbandry into three classes: (1) those with swine as a basis; (2) those with horned animals; and (3) those with riding animals as bases, respectively.

The book is devoted almost wholly to the cultural evolution. Very little space is given to the physical types of man associated with Stone Age culture and for these new names are coined: Eomorph, Protomorph, Archimorph, Metamorph, and Mixomorph. These seem simple enough until one attempts to correlate them with the terminology already in use.

Accompanying the text are seven maps and fifty plates. The index is divided and subdivided until it is difficult to know where to look for what one wants to find. For example, there are three divisions: Authors, Archaeological Cultures, and Cultural Elements. Under Cultural Elements one finds three subdivisions, each of which is still further subdivided. The three subdivisions are Husbandry (Wirtschaft), Society (Gesellschaft), and Spiritual Culture (Geistige Kultur). Under Husbandry, the subheadings are: food, shelter, raw materials, technical processes and products, tools and weapons, vessels, and clothing and ornament. Then there is the added handicap that under such a subheading as food, for example, the material is not arranged alphabetically. But it is always easier to be critical than it is to produce something better.

GEORGE GRANT MACCURDY

NORTH AMERICA

The Mound Builders. HENRY CLYDE SHETRONE. (New York: D. Appleton & Co., 1930.)

This work, as told in the Preface, "is dedicated to the average man and woman" who is seeking "the important facts regarding the Mound-builders." It contains much interesting information and should appeal to many readers. Although it treats of the entire country eastward from the Mississippi valley a large part of the book is devoted to a description of the mounds and other earthworks occurring in Ohio, and to a discussion of the several cultures recognized in that state. This allotment of space is to be attributed to Mr. Shetrone's special interest in the ancient remains discovered in Ohio, where he has worked during the past years, as well as to the richness of the material recovered.

The first chapter traces the early theories of the origin of the mounds and inclosures, and under the heading "Early Literature" names some of the more important books containing references to groups of earthworks discovered during the latter part of the eighteenth century. "With the opening of the Ohio country and the establishment of Fort Harmar and the town of Marietta, at the mouth of the Muskingum, came numerous reports of the now famous Marietta earthworks." Unfortunately Mr. Shetrone failed to mention the publication of one of the most important of these reports, namely that prepared by Captain Jonathan Heart, entitled Description and Plan of Some Remains of Ancient Works on the Muskingum, which appeared in vol. 1, no. 9, of The Columbian Magazine (Philadelphia), May, 1787. The Rufus Putnam map bearing date of 1788 may have been derived from the Heart survey. Jefferson's Notes on the State of Virginia was first published in 1785—not 1801 as Mr. Shetrone has stated. In this small volume Jefferson told

of his examination of a burial mound then standing on the bank of the Rivanna in Albemarle county, Virginia, and although, as Mr. Shetrone says (p. 17), "Jefferson's explorations failed to solve the problem of the mounds and their builders," he nevertheless solved the problem of that particular work, really all that could then have been accomplished through the opening of a single mound. Another historical reference is found on page 483. Mr. Shetrone first writes of "the arrival of the vanguard of the native race on the American threshold," and then continues: "In the historic landing of the Pilgrim Fathers at Plymouth Rock, nearly one hundred centuries later, the genesis of the white man's dominion of the Western World, there are to be found striking similarities and significant contrasts." However much this may appeal to some readers, history attributes the "genesis of the white man's dominion of the Western World" to the Spaniards a century and more before the founding of the first permanent English colony at Jamestown, in 1607.

Should the reader endeavor to learn Mr. Shetrone's true belief regarding the identity of the builders of the mounds he will discover conflicting statements. On page 38 he writes: "Had the mound-building peoples possessed adequate supplies of available stone for building purposes, who can say that they might not have survived to become an outstanding, perhaps a dominant, element of the native American race?" This implies that the builders of the mounds and other earthworks had been an unidentified race which had vanished before the coming of the historic tribes. However, on page 477 under the heading "Indians as Builders of Mounds," this sentence occurs: "Approaching the question from the standpoint of specific historic tribes and nations, it is generally conceded that in addition to the Cherokee, most of the Muskhogean nations, as the Creek, Choctaw, and Chickasaw, and the Shawnee of Central Algonquian stock, were at times, and in certain localities builders of mounds." Evidently these particular "mound-building peoples" had survived even though they had not made use of stone for building purposes. But possibly Mr. Shetrone does not regard these mound building tribes "mound builders" merely by reason of their having survived to the present day. Why this endeavor to maintain the old belief? Is the secret revealed by a few words found on page 472 to the effect that some "individuals accepted the new interpretation and immediately lost interest in the subject?"

There is a tendency among many archaeologists to ignore all evidence that sheds light on the native inhabitants of the Mississippi valley and the country eastward during the years preceding the coming of Europeans. Mystery is fostered. Thus they disregard the fact that the southern part of the present state of Ohio, and probably the adjoining portions of Indiana, Kentucky, and West Virginia were occupied by the Siouan tribes until very recent times. And it is evident all had not set forth together to seek new homes. Some lingered behind. On the French maps prepared soon after La Salle's journey to the mouth of the Mississippi, 1682, five villages of the Mosopelea are shown north of the Ohio river in a locality corresponding with the southwestern section of the state of Ohio. The Mosopelea have now been identified by Swanton as the Ofa, a Siouan tribe later encountered in northern Mississippi, to which region they had migrated from their earlier habitat.

Probably the great site at Madisonville, Hamilton county, where glass beads and other evidence of early contact with Europeans have been found, was occupied by one of the Mosopelea villages. Mr. Shetrone writes (p. 171): "The outstanding site of Fort Ancient culture habitation . . . is the great Madisonville site, near the city of Cincinnati. This site, covering an area of many acres, comprises one of the most extensive aboriginal cemeteries and habitations in the mound area, and in connection with it there were several burial mounds." The finding of early trade beads on the site, associated with a vast quantity of material of native origin, proves the village to have been occupied after contact with Europeans. This would agree with the time the Siouan Mosopelea, or Ofo, began their movement southward. And it is likewise evident that the Quapaw occupied sites in the vicinity of the Ohio, above the mouth of the Wabash, as late as the middle of the seventeenth century. These may have been the last of the Siouan tribes to have abandoned their ancient territories, where, it is believed, they had lived through many generations. Before they became dispersed, when the numerous tribes of the great Siouan linguistic family occupied the restricted area previously mentioned, the country would have been comparatively thickly peopled. The tribe, or tribes which developed the so-called Hopewell culture may likewise have belonged to the Siouan linguistic family, although their connection has not been so clearly established. Their identity will undoubtedly be discovered when a greater number of sites have been examined and the material compared. Be that as it may Mr. Shetrone's statement on page 185 should not be accepted literally: "The Hopewell peoples, unlike those of other centers of advanced cultural attainment in America, lived wholly within the prehistoric period and had disappeared from the theater of action before Europeans came upon the scene." Future discoveries may prove that descendants of the "Hopewell peoples" have been encountered in historic times, and some may even now be living far away from the valley of the Ohio.

To have developed the high culture possessed by the "Hopewell peoples" and to have erected the marvelous ceremonial earthworks, the native inhabitants of southern Ohio must have lived in peace and plenty, unmolested by war parties from other tribes. In this seclusion they would probably have erected scattered habitations, as did the Choctaw and other southern tribes, and evidently did not occupy compactly built villages as was the custom of the Illinois, the Ojibway, and others in the north. This condition may explain the failure to discover a true Hopewell culture village site, a fact mentioned by some archaeologists. The separate mound groups may have served as centers of village communities, again as in the south, although the mounds were of a different nature.

Just as a large part of "The Mound Builders" is devoted to a description of the ancient works encountered in Ohio, so also much of this review refers to the questions arising in connection with those interesting remains. But the volume is not devoted solely to Ohio, and in it will be found information bearing on the mounds and burial places in other sections of the country. The majority of these references have, however, been taken from other publications, now combined to make a connected story, but this would have been more easily followed had state

boundaries been omitted and the bounds of the ancient cultures substituted. With the great number of cultures mentioned this would have been a difficult task. Many are clearly defined, others are vague and uncertain and to the latter class belongs the one now designated Cahokia. This is evidently named after the massive, truncated pyramid, Cahokia Mound, which in turn perpetuates the name of an Illinois tribe known to have occupied the region late in the seventeenth century. The identity of the builders of the mound remains undetermined, but they had undoubtedly come from the south. Innumerable objects of stone and quantities of fragmentary pottery have been found on and about the mounds, but very little of this can be positively attributed to the builders of the works, and few burials have been discovered which may have belonged to that period. The region must necessarily have been frequented by many tribes during the years, or possibly centuries, following the erection of the mounds. It is believed the Omaha, and probably other Siouan tribes as well, were there after they had abandoned their older homes far eastward. Later several villages of the Illinois stood in the midst of the great mound group. And so the question may be asked, To which of the various tribes, or groups of tribes, who have occupied the region during past generations should the objects, now classed by some archaeologists as typical of the Cahokia culture, be attributed? Probably not to the builders of the mounds, possibly to a later period. Unfortunately the photograph of Cahokia Mound, reproduced on page 346, looking southwest (not west as stated in the legend), fails to show the broad terrace on the south, a most important and interesting feature of the great mound.

Much has been told in "The Mound Builders," but even more remains to be revealed by future exploration of numerous sites, and when that has been accomplished it will be possible, in many instances, to identify the inhabitants of other ancient villages and the builders of the neighboring mounds. A more appropriate title would have been The Mounds, and in this respect the book proves a disappointment. Many readers will reach the erroneous conclusion that the Mound Builders were mysterious tribes which lived in the distant past and long ago became extinct.

DAVID I. BUSHNELL, JR.

This volume of 508 pages has been prepared, so the author frankly states, in response to a general demand on the part of the public for something explanatory of that far-reaching mound-building custom. With this end in view, he has produced an interesting and important work. While the results of his labors are designed for the benefit of laymen, yet there is packed between the covers of his volume not a little technology of art and custom of the mound builders. The reviewer would not care to criticize his old friend, Professor Shetrone, but still adheres to his original suggestion made some years ago that the author, now our leading authority upon the Hopewell and Ohio archaeology, should have assigned certain sections or chapters to observers who have specialized in other fields. This method would not have taken away from the well deserved credit accruing to the author. Obviously, observers more familiar with the Illinois, Wisconsin, Iowa, Georgia, or Alabama fields might have presented us a little clearer picture.

Ohio has been in the archaeological limelight for more than eighty years. It is true that the Hopewell culture reached heights unattained elsewhere in this country. In portrayal of human or symbolic figures on copper and shell the Etowahans were superior. The Ohio field, with which the author is so familiar, naturally dominated in his mind other fields and therefore a large share of the book is given over to a description of cultures lying within the bounds of that state, particularly the Scioto valley.

Professor Shetrone is rather cautious with reference to his conclusions, and perhaps properly so. In so far as he goes we will all agree. Possibly, he might have indicated a trifle more clearly the vast territory occupied by mound-building stocks; further, that within this large area is another, approximately 700 by 800 miles in extent, in which mound-building and mound art was farther advanced; lastly that there is a "heart" or central and more restricted area in which are found nearly all the highly developed mound art centers. The great Hopewell culture of the Scioto valley (and the adjective is properly applied) was influenced by a knowledge of the South, whereas the Southern cultures were not influenced by a knowledge of the North. This, to the reviewer, seems very significant, and in all probability will have a direct bearing upon the solution of the entire mound problem.

Mr. Charles C. Willoughby, formerly director of the Peabody Museum at Harvard, has studied symbolism and mound art during many years of his long, busy life. So far as the Southern mounds are concerned, and particularly those related to the Muskogean culture, Mr. Willoughby sees their origin toward the westward and near the Mississippi. This will all be set forth in a study of the Etowahan, or, more broadly speaking, Tennessee-Cumberland cultures, now in preparation. Naturally, Professor Shetrone could not refer to this since the observations are unpublished. However, it would appear to the reviewer that the significance of all this lies in the fact that Willoughby interprets through symbolism and study of art forms rather than through a knowledge of mound construction or explorations. It would seem to us that the tribes who built the great works of Ohio, Kentucky, Indiana, and adjacent regions should be studied through their art and their symbolism.

Professor Shetrone has culled from many reports and papers a vast amount of material with reference to explorations, mound structure, votive offerings, etc. There are cited the works of many observers and explorers, all of which is valuable to research students and others. Professor Shetrone does not claim that his volume constitutes the last word in mound study. That cannot be presented until we have conducted explorations in what might be termed certain strategic centers. His presentation and detailed study in the Scioto valley is masterful. In so far as that famous but restricted area is concerned, the story has been completely told. Archaeological science of today is far in advance of that of Squier and Davis. The same may be said of archaeologists fifty years hence, who certainly will know much more than ourselves. Therefore, our good friends of Ohio should heed the oft-repeated suggestion to leave something for the future. Kidder and Judd explored sufficient of Pecos and Chaco areas to determine the cultural status. The same is true of the Etowah work. Very few Hopewell remains are left in the state of Ohio and these

should be religiously set aside as a reserve for the future. The Hopewell group itself should be restored to the original form of 1892. It is not necessary to destroy monuments in order to obtain their contents. This is no criticism of the reviewer's good friend, but merely a statement of fact.

There is a tendency today to extend too far the boundaries of a given culture in which we are especially interested. That is a distinct danger. We should be governed by the preponderance of evidence. A few monitor pipes or specialized effigies from Wisconsin or Iowa, Illinois or West Virginia, may indicate the presence of a tribe closely affiliated with Hopewell. It is more likely, however, that the introduction of such types is due to tribal exchange and barter.

During a conference recently held at the University of Illinois, at which were several distinguished anthropologists, it was suggested that we measure and tabulate without delay crania and long bones from the various sites in the Ohio valley and the middle South. We have already studied the ceramic art to some extent and particularly aboriginal designs and motifs on shell and copper. Our physical anthropologists have done a splendid work. They labor under disadvantage due to lack of sufficient appropriations and rather limited personnel. However, as soon as possible they should, through the study suggested above, give us the necessary data. We desire to know whether the peoples of these high culture mound centers are related to each other physically or not. This is very important. Obviously Professor Shetrone could not comment at any length on physical anthropology in his book, but early in December he told the writer during an interview that he considered the above very important.

Professor Shetrone alludes to the importance of ceramic studies. This cannot be emphasized too strongly. In the Southwest students have already classified and assigned time epochs to the famous Pueblo pottery. Our problem in the Mississippi valley and the South, as well as farther East, is much more complicated, yet it should be undertaken.

As Professor Shetrone remarked in conversation a year ago, he could not cover all these various and important features of mound life, or art, or mound origin, in a popular work. He has, however, indicated many of them and accomplished a difficult task in a most satisfactory manner, for which he merits our gratitude and support.

WARREN KING MOOREHEAD

Mythology of Southern Puget Sound. ARTHUR C. BALLARD. (Univ. Wash. Publ. Anthr., 1929. $1.00.)

A small number of Puget sound myths collected by Mr. Ballard appeared in the University of Washington publications for 1927. At the time Mr. Ballard was planning to publish the bulk of his myths in a more popular edition, and only those considered obscene or otherwise distasteful to a general public were included in the academic collection. Mr. Ballard, however, subsequently changed this plan, with the result that a new and larger collection now appears in the University of Washington series.

Mr. Ballard's collections are noteworthy for the number of variants of many of the myths secured. There are four versions of "The Man Who Would not Wash his Face," seven of "Pheasant Goes to the Land of the Dead," etc. Sometimes there are two or more versions from the same subarea; sometimes there are two versions from the same informant. Unfortunately, there are occasional synthetic myths constructed out of different versions, but these are rare and are indicated as such.

The second paper contains a variety of information about the people who told the myths. It is interesting that Mr. Ballard, who is not an anthropologist but has developed on his own his interest in local Indians, should procure a wealth of pertinent material that trained ethnographers often fail to secure. In his introduction he gives short biographical sketches of his informants and records the relationship existing between them. Besides this, he has on hand much more information not published. This includes material regarding the exact date of the recording of each myth, the language in which each myth was told, the informant's as well as the interpreter's knowledge of the language employed, the circumstances attendant upon the telling of several of the myths, and notes given by various informants concerning some of the myths. This material, which Mr. Ballard was so kind as to send to the reviewer, has been edited for publication.

The tribes and subtribes from which the myths have been obtained are partly of Salishan, partly of Sahaptin stock. Reference to the map in Haeberlin and Gunther's work, Indians of Puget Sound, will be found helpful in a study of Mr. Ballard's two papers. As to content, the myths are interesting for presenting a number of specific similarities to Shoshone and northwest California myths, as well as to those of the North Pacific coast.

D. DEMETRACOPOULOU

Petroglyphs of California and Adjoining States. JULIAN H. STEWARD. (University of California Publications in American Archaeology and Ethnology, 24:47–238, 1929.)

This is undoubtedly the most significant piece of work on North American pictographic art to appear since that of Mallery in 1893. Mallery outlined an important field of research—the present work fills in a considerable section of that outline. Perhaps no other single aspect of anthropological inquiry exerts such an appeal to the "lunatic fringe" of science as does the fanciful interpretation of rock carvings and paintings left by aboriginal peoples. Possibly for that reason the scientific recording and interpretation of these data have lagged so far behind in America. Steward's contribution of this highly objective and analytical study is therefore timely and encouraging.

The work includes a thorough description of all known California petrographs (using this term in a non-geological sense to include rock paintings, i.e., pictographs, and rock carvings, i.e., petroglyphs), and a comparison with those recorded, or otherwise known to the author, from Nevada, Utah and Colorado, Arizona and New Mexico, and Lower California. The California data are the most adequate, having been gathered over a considerable number of years by the members of the Anthro-

pology Department at Berkeley and added to and organized in their present form by the author. The Nevada material probably ranks next in completeness, with the other regional descriptions serving more as comparative than complete records. Every site where petrographs are known to occur is numbered, mapped, and discussed in considerable detail in the first part of the publication. Seventy-two full page plates and ninety-two text figures give a clear visual impression of the more important native drawings.

The author has approached the extremely difficult problem of ascertaining relationships between petrographs from different areas by analyzing their component designs into fifty elements. On identical base maps the distribution of each of these elements is shown, petroglyphs in all instances being distinguished from pictographs. One large chart correlates these design elements and their areal distribution, indicating as well the association of the various elements.

Certain design units show a general distribution over the entire area under consideration, notably concentric circles, wavy or zigzag lines, generalized human forms, and "sun disks" or circles with radiating lines. These elements are among the most widespread in the western hemisphere and are thought to represent an early type.

The other elements are more limited in distribution and are grouped into four main areas. The first of these, Area A, includes California east of the Sierras, Nevada and Lower California. Curvilinear designs are the most striking here, the circle occurring in many combinations. Rectilinear figures—rectangular gridirons, cross-hatching, angular meanders, etc.,—are also numerous. Associated with these, though less numerous, are a variety of naturalistic forms, various quadrupeds, hand-prints, bear or human tracks, mountain sheep, snakes, spirals, and stars. Area B includes Utah and Arizona; with the former area it shares the naturalistic and realistic elements, which are even more numerous than in Area A. In addition Area B has birds, horned-toads or frogs, lizards of special rectilinear style, and kachina-like humans. This is an area of predominantly realistic figures, and where geometric curvilinear designs do occur the realistic element is not strong. Most unique in style are the pictographs from Area C, which includes the western (p. 222 says "eastern" but this is plainly an error) part of southern California. These are almost invariably done in red paint and include parallel zigzags and series of diamonds. Since these symbols were made by the historic tribes in the region at the close of their girls' puberty ceremonies, we have an interesting explanation for at least one type of pictograph. There is considerable overlapping of types around the borders of this area, as Map D indicates.

Area D, to the north, includes the Santa Barbara and Tulare regions, where again pictographs prevail. Distinctive in this area is the practice of outlining figures of one color with one or more borders of different colors. Figures made up of dots, "herringbone" or feather designs, alternating bands of color, zigzags, amoeba-like daubs of paint, and anthropoid motifs are worked into designs so elaborate as to defy analysis. This elaborateness, however, characterizes the area, the well known Painted Cave near Santa Barbara (see colored frontispiece) and the sadly mutilated

Carriso rock representing high spots in the pictographic art of California, or, for that matter, of any primitive people. The above summarizes in a very inadequate fashion the author's detailed treatment of a very vexed problem of distribution.

Concerning the distinction between petroglyphs and pictographs the author makes several significant remarks. In eastern California, Nevada, Utah, Arizona, and Lower California, petroglyphs are by far the most abundant and in eastern California and Nevada almost the sole forms. The pictographs of California, except in the northeast, are stylistically quite different from petroglyphs in adjoining regions and the elements of design comprising them are largely distinctive. In southern Utah and northern Arizona it is suggested that the majority of the pictographs represent a somewhat later period than do the petroglyphs though, with the exception of Navaho and Apache pictographs, the styles in both techniques are generally the same. A strange, and at present inexplicable, similarity appears between certain pictographs in Area B, the extreme north of Area A, and those in Area D.

No positive dates can be given for any of the petrographs but there are interesting evidences and associations suggesting the temporal relationship of various types. It appears that the petroglyphs of both Areas A and B date back to the early beginnings of Pueblo culture in the Southwest. Some may pertain to the Basket Maker culture (*circa* 1500–2000 B.C.), but the majority are probably as recent as early Pueblo. The exact sequence of petrographic development in Area B is not very clear in the present account, but the student of "Southwestern" petrography will find many valuable suggestions. A definite correlation of petrographic art with known culture horizons in this region is badly needed. With only the fragmentary evidence now available Steward has made a noteworthy beginning. In Area A, weathering of rocks, formation of desert varnish, and physiographic changes indicate a considerable antiquity for numerous petroglyphs. At one site (61) above the Salton sea the presence of a thin layer of travertine over rectilinear petroglyphs dates them back to a time before the subsidence of Blake sea, the forerunner of the Salton sea. Geologists estimate this to have been between three hundred and one thousand years ago, possibly longer. The author, however, is in error (p. 231) in stating that the carvings may have been there prior to the formation of the travertine since they occur in the middle layers of the travertine deposit and not on the bare rock (cf. p. 85). The pictographs of Area C are probably much more recent than the bulk of petrography from Areas A and B. Most of these are of the distinctive girls' puberty type and were made in comparatively recent times. Pictographs from Area D are also probably fairly recent to judge from their rate of weathering in historic times. The similarity of the Santa Barbara and adjacent elaborated pictographs to the groundpaintings of southern California and the Pueblo region should be mentioned. The former, however, show high local stylization and the connection, while highly possible, is not proved. The most recent pictographs in all areas are distinguished by the presence of the horse or some other link with post-Columbian times.

The sections on aboriginal methods of carving or painting and the probable meanings and purposes of petrography are brief. It has evidently been the purpose of the author to make an objective study of the products of the art not its methods,

and he has succeeded remarkably well. Long speculations on the meaning of obscure symbols, like detailed analyses of native pigments, have value, but those anthropologists who would like to visualize the problem in its broader aspects will be grateful to the author for his choice of emphasis. Problems of psychology, aesthetics, and technology are involved in these interesting products of primitive art, but until we know more fully about their distribution, relative age, and development, such studies will hang in mid-air. The present study, with its skilfully handled mass of data and its abundant and clear illustrations, should go far to stimulate similar research in other areas.

WILLIAM DUNCAN STRONG

Wishram Ethnography. LESLIE SPIER and EDWARD SAPIR. (University of Washington Publications in Anthropology, 3: 151–300, 1930.)

Culture areas and culture centers have interested American ethnologists for some time but major culture areas, when closely analyzed, appear to be rather transitory phenomena and often savor more of convenience than actuality. With the Wishram, easternmost of the Chinookan tribes, we seem to have under consideration a minor culture center exactly between two major culture areas—the Plateau-Great Basin and the North Pacific Coast. Since the former of these two areas is characterized more by its negative than its positive aspects we can as well make the Wishram peripheral to a third area, that of the Plains. Located at the upper end of the abrupt passage of the Columbia river through the Cascade range in south-central Washington, these people of the "Long Narrows" and their close cultural and linguistic kin, the Wasco, occupied a highly strategic position of which they apparently took full advantage.

The work in hand, dealing as it does with this particularly significant group, is a valuable addition to American ethnography. It is based on the by-products of Sapir's linguistic work in 1905, and the later cultural research of Spier in 1924 and 1925. No pretense at completeness is made, but the present sketch in conjunction with earlier publications of Boas, Sapir, and Curtis, presents the Wishram in a much clearer light than shines on most of their neighbors. The University of Washington is to be complimented on the strides it is taking in securing and publishing so much of this very valuable but rapidly vanishing material.

Concerning the exact location and nature of the former Wishram villages and territories, as well as those of their neighbors, the present work is not overly full or explicit. This is easily understandable since neither author had the opportunity of covering the region in company with his informants. Their brief ethnogeographic section should be compared with that earlier given by Curtis (*The North American Indian*, vol. 8, 1911) which at the moment is not available to the reviewer. It should be noted (cf. p. 271) that there are two Memaloose islands; the one above Nixlu'idix has been used for burial purposes by the Wishram only since about 1892, while the older, historic Memaloose island, is downstream about eight miles from the same point.

Primarily the Wishram were wealthy traders, and their villages on the "Long

Narrows" constituted the greatest aboriginal trade market in the whole northwest. Holding the narrow gorge of the Columbia where plateau peoples met those of the coast, the Wishram and Wasco, as middlemen, controlled a large part of the trade. With the advent of the horse all the western plains came into indirect contact as well and native commerce was greatly increased. Slaves, horses, pounded fish, buffalo robes, wappatoo, shells, canoes, to name only the main commodities, all passed through Wishram or Wasco hands at a good profit.

Wishram culture appears as a striking blend of North Pacific Coast, Plateau, and Plains cultural traits, with the former predominant. Such traits as the existence of three social classes in addition to slaves, the institution of slavery itself, the great importance of class and wealth, sanctification of marriage by purchase, theoretical tribal exogamy, formal spokesman for chief or shaman, head deformation for both sexes but forbidden to slaves, and burial houses for the dead, are typically northwestern. The primary dependence of the Wishram on fishing, seconded by gathering, with hunting last in importance, points the same way. On the material side, rectangular plank houses, local superiority in wood-working, dugout canoes with carved gunwales attached, twined baskets and bags, small straight adzes, elkhorn wedges, wood and horn ladles, stone bowls, and the use of the footdrum are further manifestations of Wishram coastal affiliation.

Considering the lack of highly distinctive traits encountered in the Plateau area a rather surprising number of definite parallels to this culture can be found among the Wishram. Sapir has previously (1907) pointed out that Wishram mythology is definitely transitional between the two areas. The predominance of Coyote rather than Raven in Wishram myths is an example of this. In the field of religion much of the vision quest, and more particularly the guardian spirit dance, are shared by both. The mat-covered rectangular lodge for summer use is a link, and, if the round, semi-subterranean earth-lodge can be safely assigned to the Wishram, it too, is characteristic of the plateau. (The reviewer, on the basis of conversation with old Wishram and the detailed account of Lewis and Clark, favors the rectangular plank house, which was also semi-subterranean, as the old characteristic winter dwelling of the Wishram. In the present paper, however, the round earth-lodge is given as more typical on the basis of information received from one of Sapir's informants. Since Lewis and Clark report this type of dwelling among the White Salmon Indians downstream from the Wishram it is quite possible, even probable, that the Wishram had both. However, I seriously doubt that the earth-lodge was more characteristic than the plank house.) Other cultural links with the Plateau are the custom of pulverizing salmon; the use of wooden mortars, hand drums, notched rasps, stone-headed lances, red and yellow war paint, and the small hemispherical sweat-lodge.

Reasonably enough, the authors regard the numerous Plains traits in Wishram culture as late (i.e., after the acquisition of the horse, *circa* 1750). These traits crop up most frequently in material culture and include the costume of women (skin dress, leggings and moccasins), feathered war bonnets for men, shields, elbow pipe used like the calumet in council, occasional use of horse travois, beaded bags and rawhide parfleches with geometric decoration (the latter mainly from the Nez Percé).

I have omitted, solely through lack of space, reference to the excellent descriptions of Wishram individual life, warfare, shamanism, acquisition of power, and religious cults. One misses in this paper the exceedingly detailed comparative sections to be found in Spier's earlier Havasupai and later Klamath reports. There are, however, many valuable comparative references in the text.

It is clear that the Wishram were not only disseminators of coastal culture but were also very receptive to Plateau and Plains influences. How long the Wishram had occupied their historic territory is an interesting question not touched on by the authors. On the basis of recent archaeological research it has been suggested that they were relatively late comers, at least at Wishram or Nixlu'idix, being preceded by a (Salish?) people of Plateau culture (Strong, Schenck, and Steward, UC-PAAE 29: 1–154, 1930). However this may be, the present study would seem to indicate that the Wasco and Wishram were responsible for most of the coastal characteristics revealed in the late archaeological horizons of the Dalles-Deschutes region. Close contacts and gradual interpenetration of coastal and plateau peoples had developed a uniquely blended culture in the valley of the middle Columbia, a state of affairs well indicated by the present study.

WILLIAM DUNCAN STRONG

Californian Indian Nights Entertainments, compiled by EDWARD W. GIFFORD and GWENDOLINE HARRIS BLOCK. (Glendale, Calif.: The Arthur H. Clark Co., 1930. $5.00.)

The rereading of these folklore selections in this attractively printed volume underscores again the uniqueness of California mythology. In a world where, one comes to feel, one would find the magic flight and John the Bear and tail-fishing in a collection from Congo pygmies or the Australian bush, California is a place of refuge. The tales that make up the mythology there are not the worn stand-bys of the world; these tales from the Pacific coast have a freshness of invention that one discovers all too seldom in collections of folklore. They are surprisingly indigenous.

There are good details. Sun went stealing at Frog's house and stole all her children. Frog pursued her and succeeded in climbing into her house of ice and swallowing her. Then she began to swell. "If Sun swells, and kills me, and wins, there'll always be thieves in the world." Sun kept on swelling and burst Frog in two. Therefore there are people today who steal quite as Sun did. Or, besides the obstacles of thorn bushes and slippery ice and snakes, the hero has to pass also through the Valley of Old Age where everyone who passes weakens and falls. He grows grey, then white, then bent, but he is given magic power to overcome here also. Charming, too, is the story of the arrangements between Moon and his sister Sun. At first Sun traveled by night, but all the stars fell in love with her and blocked her path, and her brother Moon had to take the night trail for her, leaving the day to her.

I miss from the collection some of my especial favorites, most perhaps the Maidu story, as it is told in the *Ethnological Society Publications*, of Earthmaker as the solemn, heavy-footed benefactor who is tricked into the present less smooth but

more amusing arrangements of life by the wily Coyote, the initiator of sex and death. The delightful story from the same volume of the hunting comradeship of Thunder and Mosquito is omitted too.

The volume is prepared primarily for local sale, with designations in each case as to the county in which the tale is told, but no reference to the collection from which the tale is taken. In view of the way in which California tales are scattered through the literature, it is hard to see why it was decided to give no references either to the originals of the tales used or to the collections where more might be found. Mr. Gifford's introduction, however, gives good weight of information about the California Indians and prepares the general reader for the tales themselves.

RUTH BENEDICT

SOUTH AMERICA

Ars Americana; L'Archéologie du Bassin de L'Amazone. ERLAND NORDENSKIÖLD. (Paris; Les Éditions C. Van Oest, 1930.)

For both the artist and the archaeologist this is a work of great importance since it both illustrates in excellent technique, and describes and interprets in Dr. Nordenskiöld's usual sane scientific style, the archaeology of a region which is but slightly known and on which little has to date been published even in the most technical and obscure scientific monographs.

It is a folio volume, of de luxe format and impeccable typography, illustrated with fifty-seven large heliotype plates, of which seven are in natural colors. Including the thirteen text figures there are one hundred and ninety-one illustrations, although in many cases several views of the same specimen are given. A map and bibliography increase its value to the scientist.

The text consists of 71 pages. Pages 1–19 are devoted to a general discussion of the archaeology of the Amazon basin, including quotations from the earliest explorers; pages 19–26 to a description of the sites; pages 26–36 to a discussion of the comparative archaeology of these sites; pages 39–63 to a detailed description of the plates; and pages 65–71 to a bibliography and lists.

The region discussed includes primarily the lowlands of the lower and central Amazon and the lower portions of its tributaries, but also includes Brazilian Guiana and the Mojos and Beni regions of the upper Madeira in Bolivia. The Matto Grosso region and the headwaters of the Peruvian affluents, such as the Ucayali, where the archaeology is greatly affected by the culture of the Peruvian highlands, are naturally excluded. The specimens illustrated are mainly drawn from the museums and private collections in Europe, South America, and the United States, the larger part, naturally, being in Dr. Nordenskiöld's museum in Göteborg, Sweden, mainly collected by Curt Nimuendajú, to whom the volume is dedicated.

The archaeology of this immense region evidently demonstrates many points in common, among which may be mentioned very large pottery vessels, mainly burial urns, generally with anthropomorphic decorations or form. The decoration

of the pottery is exuberant with high relief, incised, engraved, or painted designs, but without much coloration.

Dr. Nordenskiöld's scientific deductions may be summarized as follows. The exponents of the highest culture in the Amazon valley and the makers of the excellent pottery were probably the Arawak, an inference indicated by the close resemblance between some of this pottery and that of the Antilles. The use of high relief and incised decoration probably preceded painted designs. These were developed or adopted after the occupation of the Antilles by the Tainan, hence painted decoration never reached the West Indies. There were probably two main civilizations characterized by different burial customs. One of these buried in urns, the other directly in the ground or else consumed the ground bones of the dead with their food. These cultures were probably not contemporary. Urn-burial is probably the later custom, since glass beads have been found in some of the urns; it had not spread to the Antilles, where the dead were buried directly in the ground. Also, in a mound on the Rio Beni, interments were found in the lower part, burial mounds in the upper. The closest resemblances with Antillean pottery are found at Santarem, where pottery relief is very high and ornate and burial urns are not found, the population, according to the earliest historical reports, consuming the pulverized bones of the dead. There is also considerable resemblance between the pottery of Santarem and that of Panama, Costa Rica, and the Beni and Paraná rivers. The anthropometric form or decoration of the burial urns was probably an influence from the western highlands. As regards the age of these two civilizations, the interments in the mound on the Beni river were evidently contemporary with the Tiahuanaco culture, the upper strata with the burial urns contemporary with the Inca civilization, and this may afford a clue as to the archaeological periods and sequences in the Amazonian area.

The major part of the specimens illustrated are from Marajó island and Santarem. The former group is comparatively well known to students of South American archaeology although little illustrative material has heretofore been published upon it. It is to be regretted that some of the unusual specimens from Marajó island secured by the late Dr. W. C. Farabee and now in the Museum of the University of Pennsylvania were not included. The Santarem material is most unusual, especially for its Antillean connections, and practically nothing of the type of the several beautiful vases here figured has ever before been published. Of exceptional interest also are the stone figures which are most unusual and show affiliations with Colombia and with Nicaragua, especially the type of human figures with animals on the back and shoulders.

Except for two plates, 8, which is upside down, and 25, in which the two Santarem bowls are reversed from the references to them in the text, I can make no criticism whatever of this excellent and important work.

J. ALDEN MASON

ASIA

A History of the Orient. G. NYE STEIGER, H. OTLEY BEYER and CONRADO BENITEZ. (Boston: Ginn and Company, 1926–1929.)

It is not easy in a few words to give an opinion of this book. I could perhaps summarize my opinion in these terms: the general idea of the work is excellent, but its execution in detail leaves much to be desired.

It is obvious, and I am glad to note, that the new and fresh way of seeing the history of the East has already penetrated as far as high school text-books. The Orient is no more a kind of supplement to the history of Europe, interesting only so far as it came in touch with Europe; it is dealt with now for its own sake, and Western influences form only an important portion of this history.

The manner in which this history is conceived is best seen in a survey of the five parts into which the work is divided: (1) The Beginnings of Oriental Civilization (down to the fourth century B.C.); (2) Development and Growth of Empires (from the fourth century B.C. to the end of the twelfth century of the Christian era); (3) Culmination and Decline of Imperial Expansion (1200–1550); (4) Extension of European Influence in the Orient (1550–1860); (5) Development of Oriental Resistance to the Aggression of the West (1860–1926).

These parts are subdivided into chapters, and here is a second point on which this work differs favorably from the generally adopted scheme. From the beginning not only the two territories of which our knowledge is the most extensive, viz. India and China, are considered, but Japan, Further India, and the Archipelago, too, take their right place as important factors in the history of Oriental civilization.

Besides these, the authors have also thought of providing the young men, for whom this work is intended, with something over which to puzzle their brains, in so far as there are "Topics for Discussion" added at the end of each chapter. There are among these "topics" several which one reads with surprise,—e.g., when one is asked: What would Shih Huang Ti do were he Emperor of present day China?; How would Wang An-shih act against the theory of Soviet Russia?; or, when Akbar must be compared with Gandhi, and Shosoku Taishi with Emperor Augustus and with Cavour; or the relation between Śrīvijaya and Majapahit compared with that between Rome and Carthage;—but in all of which one sees a rather attractive idea to find out the common elements of things that are so far removed from each other in time, in space, and in degree of civilization. The great danger is however, that this comparison must be made by high school and other youthful students, who have at their disposal merely the limited data obtained from their textbooks, and who, after they have come to some necessarily superficial answer, may perchance fancy that they are competent judges of historical problems!

There is no reason to be astonished that the Bibliography at the end of the work contains, with a few exceptions, only English books, considering for whom the work is intended. But what seems to us to be rather serious is that the authors, too, have confined themselves mainly to that literature. It seems that, at least so far as con-

cerns the portions dealing with Further India and the Indian Archipelago, no notice whatever is taken of some important books and studies written in languages other than English.

This, naturally, reaps its own reward in the lack of many things which should be found in this book, and in blunders both small and serious in those things which do occur in it. We want to confine ourselves to the Archipelago only, although we should like to mention the strange characterization of the teachings of Buddha (p. 41), "that the way of Salvation lay in a complete surrender of man's will to the will of God,"—and this of the oldest Buddhism, which just excludes as completely as possible the "will of God." Concerning the Archipelago we would mention: that there is no trace whatever of Pallava colonies in Central Java at about A.D. 200; that Śrīvijaya, too, does not appear on the stage until about 450 years later (p. 36); that there is no indication whatever that the colonization originated from the Pallava government (which?, p. 49); that the ship on the Barabudur (p. 50) represents the eighth century type of vessels of Java, and not that of the Pallavas of so many centuries ago; that tradition sets Aji Saka not in the year 1 (p. 106), but in A.D. 78; that the eight or nine towns of Sumatra (p. 111) are based on fantasy; that Singapore became a place of importance only after the period of Śrīvijaya; that Arabian trade in the first century (p. 130) is entirely problematical, but Chinese trade (p. 132) was of importance long before the ninth century; that it is absolutely wrong to say that religious tolerance—noted in Java centuries before that—began with King Kĕrtanagara (p. 180), whereas Buddhist scholars had visited the Javanese court since olden times; that the capital that had been captured in 1293 was not Singosari (p. 185) but Kĕdiri; that there is no reason to assume the introduction of firearms in Java during the Mongolian expedition (p. 186); that a "general massacre of the Chinese merchants and traders" in Java at the beginning of the fifteenth century is out of the question (p. 191), but obviously the mistake is founded on an account that during the inland disturbances a few members of a Chinese Embassy, which happened to be in the capital, had been killed; that Achin as a state was founded only after 1500 (p. 207), at about the time when Malacca became Portuguese; that the rule of the four kinds of genealogy of Malayan princes (p. 218) does not hold good in general; that Raja Bonang was not the first Mohammedan ruler of Java (p. 233); that the first Dutch fleet to Java did not perish at all (p. 252); that the subjection of the Sultan-pretender of Achin (p. 434, not in 1905) was of no importance whatever for the placation, etc. These are all incorrect statements requiring more or less correction,—passages, standing separately, which do not influence the general understanding of the current of historical development.

Much more serious are the statements dealing with the mighty position of the great kingdoms of the Archipelago, Śrīvijaya and Majapahit, respectively. We see a map, page 113, where a dotted line marks "the greatest extent of the Sri-Vishayan Empire, about 1180 A.D." This year is rather unlucky—at least so far as Mons. Coedès is right, that at that time the fall of the Empire had already begun. The spelling *Sri-Vishaya*—whereas all the ancient documents of the country itself give

Śrīvijaya (*sh* occurs only on a few inscriptions from abroad—India proper)—evidently aims to make the "Visayan" influence acceptable as far as the Philippines, for the dotted line surrounds besides Sumatra, half Java, the Malay peninsula and Ceylon, part of the Coromandel coast of India proper, Borneo and Celebes, the Moluccas, and the Philippines, and even the southern half of Formosa, a portion of the opposite shores of China and of Hainan. All these beautiful things are, says the explanatory legend, "prepared from original sources, by H. Otley Beyer," and one asks with surprise what could be those "original sources"? It seems, following the text (p. 120), that these are manuscripts from Panay; but we are not told what are their contents, which are their dates, and how is their reliability proved. Until now, the influence of Śrīvijaya was established only for Sumatra, the Malay peninsula, and Java, perhaps also Camboja, and even "more perhaps" Ceylon. When the authors now ascribe such an amazing extent to this Empire, one has at least the right for control purposes to request the publication and the presentation of the documents on which they found it. It is not quite right to put all these statements, without any further substantiation, as facts before the student.

The same applies to the Empire of Majapahit (p. 179), which—once more on the basis of these "original sources"—seems to embrace the whole Archipelago and the Malay peninsula, the Philippine islands and South Formosa, and also a great portion of the south coast of China, and a considerable part of Further India. That this is incorrect, can easily be proved with the aid of the Old-Javanese poem *Nāgarakĕrtāgama*, dating from the most flourishing time of the Empire of Majapahit, which gives a description of that realm. Here we read that the Empire really covered the Archipelago and the peninsula, but we are informed that there were nothing but amicable and commercial relations between Majapahit and the states of Further India, China, and India Proper. The assertion that three districts of the Philippines occur on a "Majapahit List of Colonies," is something entirely new, but our curiosity about this "List" is not satisfied by the writers. A few pages are devoted (pp. 195–199) to some similarities between customs and achievements of Java and the Philippines; so far as these are correct, they prove a contact between both peoples, but they do not prove that this contact dates from the time of Majapahit, nor that a political influence was collateral with it. The same applies to the golden image reproduced on page 197; it shows undoubtedly Javanese influence in style, but it is sufficiently different from Javanese art to make it clear that it has not been made by a Javanese.

I have dealt somewhat lengthily with my scruples; but I did so because to me it is regrettable that a work, otherwise so attractive and so very suitable for its purpose, and which seems primarily intended to give a good idea of the course of the history of the Orient, is disfigured by incorrect statements. I hope that these will disappear from a new edition, at which time I shall feel that the book will serve all useful purposes which can be rightly expected of it.

N. J. KROM

AFRICA

A Contribution to the Study of Prehistoric Man in Algeria, North Africa. ALONZO W. POND. With supplementary papers by ALFRED S. ROMER, FAY-COOPER COLE. (Logan Museum Bull., v. 1, no. 2, Beloit, Wisconsin, 1928.)

Under this general title three different though closely connected papers are published, being the result of excavations and studies at Mechta el Arbi, in 1926–1927, by Mr. Alonzo W. Pond, assistant curator of the Logan Museum. In his field work Mr. Pond was assisted by Mr. A. Debruge, of Constantine. The site in question is situated about forty miles southwest of the city of Constantine,[1] on a plain of Quaternary formation which has a mean altitude of about 800 meters above sea level. Mechta el Arbi is the first site studied under the authorization of the Government General of Algeria. Hence one-half of the various specimens collected have been presented to said government together with a few unique pieces discovered. The remainder is in the Logan Museum.

It goes without saying that this *Contribution*, abounding in numerous details and technical discussions, does not lend itself to an exhaustive review. A paper like this has to be closely studied. No review, however adequate, could sufficiently render everything revealed in the nine tables showing the material collected. The reviewer's task is limited to drawing attention to the publication and to briefly summarizing the contents and the main conclusions. When a few critical remarks are made they should be interpreted as a proof of the interest the reviewer takes in the work of Mr. Pond and his collaborators.

Mr. Pond's personal paper contains, first, a general introduction by Dr. George L. Collie, curator of the Logan Museum; secondly, a preface by Mr. Pond; and finally, ten chapters and a bibliography. Chapters 3–8 deal with the excavations at Mechta el Arbi in a strict sense, while in the other chapters general questions with regard to North African prehistory are treated. These are the *escargotières* (kitchen middens mainly composed of enormous quantities of snail shells mingled with campfire ashes) and the analogies to the cultural elements of Mechta el Arbi from the culture horizons of France.

The objects found consist of flakes, scrapers, knives, burins, poignards, microliths, bone points, and nuclei. Among these, flakes and scrapers are the most numerous, respectively 1,072 and 1,312. Simple flakes are countless. Least numerous are bone points (99) and burins (26). From the table on page 57, giving the typical stone implements, "one would say it is very evident that the industry in this escargotière of Mechta el Arbi is dominantly Upper Aurignacian." Thirteen pieces only correspond to Mousterian (slight), and thirty-four to Lower Magdalenian. As far as the bone industry of the site examined is concerned, Mr. Pond thinks the similarities to European types are too few to allow a comparison.

Professor Romer's annexed study, "Pleistocene Mammals of Algeria," although

[1] It is noteworthy that on page 11, Mechta el Arbi is located "about fifty kilometers (=a little over thirty-one miles) west of Constantine." Which of the two is exact?

having a general and historical trend, bears particularly upon the fauna of the Palaeolithic station at Mechta el Arbi. Among the bones found I may mention: *Felis leo*, *Canis aureus*, *Herpestes ichneumon*, *Hystrix cristata*, *Oryctolagus cuniculus*, all previously unreported. Furthermore, *Bubalis boselephus* is the most abundant animal in the Logan Museum collection. This "hartebeest" was evidently a favorite game animal. As could be expected, utilized egg shells of the ostrich have been found also. To summarize: the probable age of the fauna at Mechta el Arbi appears to belong to the Upper Palaeolithic, which agrees with the archaeological evidence.

Professor Romer's paper also contains an extensive bibliography.

The third supplementary paper, by Professor Fay-Cooper Cole, treats of the human skeletal material found at Mechta el Arbi.

Four burials were found, a child and three adults, at depths varying from three to six feet, and under conditions which indicate that they "certainly belong to the population which is responsible for the mounds." After all that has been said by Mr. Pond and Professor Romer, it strikes me as somewhat curious when Professor Cole says, on page 167:

> Since the faunal remains and cultural objects indicate that the mounds were built in pre-Neolithic times, *perhaps in the Aurignacian*,[2] this new skeletal material becomes of particular value for the light it may throw on the race or races which inhabited Africa at the time.

As the skulls and the other skeletal remains found at Mechta el Arbi are partly defective and incomplete, I think it behooves us to be prudent when drawing far-reaching conclusions.

To the description of the four skulls exhumed by Mr. Pond's party is added the description of another skull previously found at Mechta el Arbi by Mr. Debruge. This skull was studied by Dr. Henri Lagotala, and the results published in *Mémoires de la Société archéologique, historique et géographique de Constantine*, vol. 55, 1923–1924. In Professor Cole's paper it is called the "Mechta type skull."

Of the numerous measurements taken and indices calculated I will only mention the cephalic index. The child "not over six years old," has an index of 83.9. That of the adults is 78.5, 74.3, and 73.37, while the "type skull" shows 76.6. This gives for the adults an average cephalic index of 75.6.[3] This average, as well as the individual figures, is doubtless within the limits of variation of the prehistoric as well as of the actual Berber population. The child's index is certainly somewhat exceptional, but children's indices, as well as certain other characters, are, as is well known, liable to great changes and wide oscillations. Their racial value is somewhat restricted, especially in the case of only one rather defective skull. Furthermore, adult *averages* of 81 and 82 with maxima of 88 and 89, on living Berbers are *inter alia* mentioned by the late Chantre. Therefore, it seems to me far-fetched to say that the Mechta child "appears to fall within the Alpine classification." Alpines *sensu strictu*, as we know them in Europe, have, to my knowledge, never been found in Algeria,

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[2] Reviewer's italics.

[3] Computed by reviewer.

neither in graves nor among the living. Neither can I share Professor Cole's opinion "that considerable racial diversity existed among the builders of the shellmounds." I think, however, he is right in saying about skull no. 3, that "it gives the impression of being somewhat negroid." As far as I am able to judge, this is the only trace of an alien race in the Mechta el Arbi material.

I think, however, and Professor Cole seems to be of the same opinion, that the few characteristics of the skeletal material found, which remind one of the Neanderthal and Cro-Magnon, are of too little importance to warrant a genetic relationship.

The numerous illustrations of Mr. Pond's paper, distributed over twelve plates, are excellent and instructive. The same, although with a restriction, applies to the illustrations representing the human skulls in Professor Fay-Cooper Cole's contribution. The orientation (norma and horizontal line) of some of these skulls, especially the one figured on page 186, does not respond to the requirements of modern cranioscopy. It is strange and a pity that a map showing the sites of the excavations, etc. and the immediate surroundings is wanting.

Finally, I wish to say that this review was written at the request of the editors of the AMERICAN ANTHROPOLOGIST. Moreover, I must draw attention to the fact that this *Contribution* of Mr. Pond and his collaborators also has been reviewed, perhaps a little too briefly, by the well-known specialist in North African prehistory, Dr. E. Gobert of Tunis.[4] Instead of venturing a general opinion about the *Contribution*, I think it preferable to quote Dr. Gobert's verdict when he says in the main: "as far as well observed facts are concerned, a valuable contribution. With regard to the artifacts and the fauna of Mechta el Arbi, however, nothing is new to science." Concerning the fauna I should hesitate to endorse Dr. Gobert's opinion unconditionally.

H. F. C. TEN KATE

Rock Paintings in South Africa, from parts of the Eastern Province and Orange Free State. Copied by GEORGE WILLIAM STOW, with an introduction and descriptive notes by DOROTHEA F. BLEEK. (London: Methuen and Co., 1930.)

One must read the title in full as printed inside the book, for the partial title on the outside cover and the back would be misleading, since only a relatively small portion of the vast South African country is represented here. This publication "de luxe" was financed by the Carnegie Trustees, a worthy use of money, and is a masterpiece of presentation by Methuen and Co. of London. The printing is excellent and the careful make-up of the colored plates can hardly be surpassed. At the end of the large volume the artistic map by A. E. Taylor is very helpful in locating the districts and sites mentioned in the text. If there were an index of the plates with respective numbers and subjects as an aid to finding those desired, it would save time and also the annoyance of trying to keep in place the loose, transparent sheets for the protection of the pictures.

Twenty-one pages of introduction by Miss D. F. Bleek, an authority on the subject, are worth reading with care as they contain valuable information. She tells

[4] Revue Tunisienne, Nouvelle Série, no. 2, 2e trimestre 1930.

us that the paintings scattered all over South Africa are innumerable, especially in the rocky regions. But the caves sheltering the more abundant and often the best paintings are near the big rivers in the mountain gorges. The present volume contains reproductions of 74 of the numerous originals collected by G. W. Stow, a trader and geologist, between 1867 and 1882. This, then, is merely a selection, for the hardy pioneer had to choose from the very large number of paintings he discovered; from various panels and superposed scenes he drew only the figures or groups he thought significant as representative of the animals of the country and the different activities of the Bushmen. He carefully noted the locations of the sites and all the interesting information he could obtain at the time concerning authors, meanings, etc. Miss Bleek visited the same country and found again 60 of the scenes represented in the present collection, besides many other similar ones. We have then all guarantees of authenticity.

Among the animals the most frequently seen are the varieties of buck: eland, hartebeest, kudu, gemsbok, springbok. Elephants are numerous, rhinoceri and hippopotami rare. Quagga, zebra, giraffe, wild boar, monkeys and baboons, jackal, hare, appear here and there; lion and leopard are common beasts of prey. Domestic animals are found in the more recent paintings. Except for ostrich and crane, birds are few, and so are insects; but snakes, especially pythons, are often present. It is mostly in mythological scenes that frogs, tortoises, and fish are found. Plants are most uncommon. Human beings are represented singly and in groups, in all attitudes and occupations; weapons, clothing, and other domestic objects can be recognized with them. Racial and cultural differences marked either by skin color, shape and size of body, or by clothing and weapons, have been clearly depicted since the coming of the Bantu and later white men in South Africa.

The main fault of both animal and human figures is elongation of the body. The heads of the animals, particularly the buck, are very carefully drawn; those of men, in most cases, are simply sketchy. Neither proportions nor realistic colors are considered essential, but there is a real sense of motion, giving a dynamic quality to Bushman paintings. Certain scenes reveal a feeling for composition and a few plates reach a truly artistic effect, especially plate 21, representing a Bushman, under the guise of an ostrich, stalking three male (black) and two female (blue) birds. The five ostriches display unmistakable apprehension, and the variety and naturalness of their attitudes produce a most pleasing picture of high artistic quality. A systematic comparison of Bushman paintings and pictographs reported from other parts of Africa should prove very interesting. In fact, the origin of this South African art is likely to be found farther north. For any one who has seen the paintings of the Spanish rock-shelters, some scenes represented in this book look strangely familiar.

The principal colors used are red, orange, yellow, brown, black, and white; more rarely blue, blue-gray, pink, and violet. Ochres and clays furnished the common pigments; hematite for red and brown; white is zinc oxide; the black is charcoal; blue probably comes from phosphatic nodules. Dark red and orange are more frequent in the older paintings because more lasting, while white is clearly seen only in the recent drawings. M. C. Burkitt had indicated color sequence for pictographs

in Rhodesia, but, according to Miss Bleek, the age of the southern paintings cannot be successfully studied by the observation of color superposition. For she has seen the same shade in the lowest and in the topmost layers of a palimpsest, and two colors alternating in positions. Neither can we judge of antiquity on the basis of preservation, for the many agents of destruction act very unevenly in various places. The soft sandstone flakes off easily in those rather shallow rock-shelters. This is also why the reproductions given in this album are from the drawings of Stow and not from sketches by Miss Bleek, some paintings having so deteriorated in the course of half a century that they could not have been copied as exactly now as they were by the early visitor. Such extensive weathering in such a short time seems to argue against great antiquity.

Can we distinguish the periods according to quality of workmanship? No, says the author, good and poor drawings are found regardless of layers of paintings. Could we, then, distinguish differences of style? Not according to periods, for monochrome animals are seen in different shades in any layer of the palimpsest. But, as to district, yes, local variations are found and the observations of Burkitt confirm that statement and amplify it as he distinguishes regional styles and a possible chronological sequence.

In recent years a few writers have doubted the Bushman authorship of those paintings. On this question Miss Bleek clearly states her opinion in these terms:

> I have not the least doubt that the paintings are the work of Bushmen.

and she explains briefly the reasons for her belief. She then gives a short but comprehensive sketch of the life and culture of the Bushman with which she is so well acquainted,—a sort of introduction to the question of the "raison d'être" of these paintings. She reviews and refutes the principal purposes brought up by different writers or schools of interpretation of primitive art. Neville Jones, in his valuable book, The Stone Age in Rhodesia, gives a more complete discussion of the same problem and especially of the argument offering sympathetic magic as the main motive for the hunting scenes, dances, and mythologic figures, somewhat as the majority of European prehistorians for the Palaeolithic art of the French and Spanish caves. Miss Bleek, contrarywise,

> cannot help feeling that only from love of painting would they (the Bushmen) ever have painted so much, only from a spirit of emulation would they have covered the same rock-surfaces over and over again. That now and then an artist may have used the skill acquired for pleasure to make a magic picture seems possible.

It would lead us too far to debate this point.

The second and much larger portion of the book is made of 72 plates; some in black and white, a great many in colors. They are grouped by provinces and districts. For each plate the following points are briefly and clearly mentioned: locality, site, description, explanation, dimensions. This valuable informative text comprises at times some explanatory notes from Stow and interpretations furnished by Bushmen to whom the pictures were shown. This, in itself, is very interesting.

Such a splendid publication, both as to text and plates, will be a joy for all those interested in "primitive art"; it will contribute a reliable source of information for some aspects of the ethnology of the Bushman, and, together with other works, for comparative study of African art, and also with prehistoric European art, especially of Spain. Similar albums of petroglyphs, pecked, incised or painted, from various African regions would be invaluable as dependable material for further studies along those lines. They would do for Africa what the incomparable publications of the Institut de Paleontologie Humaine, subsidized by the former Prince of Monaco, did so well for the Palaeolithic art of Western Europe.

E. B. RENAUD

PHYSICAL ANTHROPOLOGY

Menschen der Vorzeit. Ein Überblick über die altsteinzeitlichen Menschenreste. (Prehistoric Men. A Survey of the Human Remains from the Palaeolithicum.) HANS WEINERT. (Stuttgart: Ferdinand Enke, 1930. V+139 pages, 61 figures in the text.)

Among the vast literature which the constantly increasing interest in human prehistory has stimulated, the present volume is doubtless a very valuable addition. Not at all voluminous, its 139 pages contain concentrated but nevertheless exhaustive information on the human fossils, including the most recent find of Sinanthropus. The representaton of the prehistoric human skeletal remains in the chronological order of their recoveries is sponsored by the concepts and their application, of human phyletic history, the geological and cultural aspects. The successive chapters treat of: The Geological and Palaeontological Prerequisites of Human Incipiency; The Glacial Theories and the Co-ordinate Succession of the Human Cultural Stages; The Human Ancestors in the Tertiary and the Missing Link; Man of the Old Palaeolithicum; Man of the Mid-Palaeolithicum; The End of Neandertal Man and the Transition toward Homo Sapiens; Man of the Young Palaeolithicum; Man of the Mesolithicum; The Phyletic Significance of Palaeolithic Man in regard to Homo Sapiens Recens.

As a means of reference the book gives complete information about each specimen as to geographical provenience, morphology and phylogenetic position, and as far as ascertainable geological and cultural position. All the more important specimens are given in illustration. The usefulness of the representation is greatly enhanced by the uniform orientation of the cranial material in the ear-eye plane, but the most distinguishing feature is the sound critique which not only passes on the individual find but, of still greater moment, pervades and sifts the great and varying mass of morphological and phyletic evidence. The superposition in glabella-opisthocranion orientation of the hylobates, chimpanzee, Pithecanthropus, and Neandertal cranial outlines, which in this order demonstrate a scheme of morphological advance both convincing and justifiable is, in figure 61, page 132, quite instructive. The Piltdown problem in its various aspects is, for the author—as also for the present writer—not yet settled (p. 83), and so is the problem of genetic relationship between the species *primigenia* and *recens* of mankind, although it is not

unfavorably commented on in various places. "Spurlos verschwunden ist die Neandertal-Form also bestimmt nicht" (p. 83, also p. 135). America from the anthropological or rather anthropogenetic point of judgment receives, quite naturally, a negative consideration (pp. 15, 61, 118), while the cultural complication, particularly in connection with the geological conditions, lay outside the compass of the book.

Citing from the last chapter, a gist of the discussion appears to be sublimated in the following:

> The foundation of our genetic history is the unity of mankind; *monophyletic* are all the various human forms in so far as only *one* species of man ape succeeded in the transition from animal to man (p. 127);

and further:

> This appears today as the best solution in the problem of humanization, that chimpanzee and man remained united the longest during the process of common development. Furthermore, the separation cannot have taken place before the beginning of the glacial ages (p. 127).

The book as already mentioned is, on account of its up-to-date critical tendency and the reliability of its representation, a very valuable addition to the specific literature, and would merit a translation into English. In such a case, and also in that of a second German edition, it should receive a much more elaborate index, which in its present form is insufficient. On page 70, the name of "Miller, New York," appears which should read Washington, for doubtless Geritt S. Miller, Jr. is referred to; and Furfooz lies in Belgium, not in France as indicated on page 121.

BRUNO OETTEKING

Craniology of the North Pacific Coast. BRUNO OETTEKING. (Publications of the Jesup North Pacific Expedition, volume 11, part 1, Memoir of the American Museum of Natural History. 391 pp. of text, 93 pp. of tables, 11 pls.)

No one who is familiar with the meticulous accuracy of Dr. Oetteking's scholarship and with his splendid mastery of anthropometric technique would expect of him a less finished and thorough piece of work on the crania of the Jesup expedition than he has presented in this great volume. Nevertheless the reviewer has been dazed with admiration, not untinged with envy.

The skull material, which is the subject of this study, consists of some 560 specimens, most of them in good conditions, but only 148 undeformed. The author has divided this material into four groups. (1) the Undeformed; (2) the Cowichan deformation; (3) the Chinook deformation; (4) the Koskimo deformation. Chinook deformation is antero-posterior (fronto-occipital) compression. Koskimo compression produces a conical effect by bandaging. Cowichan deformation is an intermediate type. Dr. Oetteking illustrates the effects of these deformations by median sagittal perigrams and angles of declination.

The exhaustive craniometric study of the deformed skulls leads principally to conclusions as to the effect of deformatory strains upon various parts of the skull. These are of great interest to physical anthropologists but need not be detailed in this review which is intended for anthropologists of all sorts. The skulls of the Unde-

formed, with the exception of the Haida, are of delicate texture, moderate to submoderate in size, showing tendencies toward mesobrachy- and hypsiorthocrany, medium to high faces, medium to high orbits, mesorrhiny tending toward leptorrhiny, mesognathy, alveolar prognathism, and moderately developed chins. Age and sex differences are of the expected types. Compared with Mongols, tribal varieties of the undeformed show tendencies toward greater long-headedness, lower cranial heights, lesser facial breadths, narrower noses, higher orbits, and greater prognathy. The Lillooet tribal type is characterized by extreme shortheadedness, low cranial and facial heights, considerable facial breadth, low orbits, and broad nasal apertures. The Eastern Eskimo are distinguished from the Western Eskimo by their cranial diameters, the development of the sagittal crest, the extreme narrowness of the nasal aperture, and the frontal orientation of the orbits. The various tribal varieties of the undeformed show fundamental type affinities with the Mongol stock.

The morphological observations upon these crania are beautifully complete and have been discussed with exemplary thoroughness. The general morphological evaluation (according to "Caucasid" standards) lists as inferior traits: phaenozygy in connection with postorbital constriction, relatively narrow nasal process of frontal bone, torus occipitalis, crista supramastoidea, tympanic hyperostosis, relative levelness of petrous parts. Advanced traits include: smoothness of cranial relief, tendency toward facial narrowing, projecting nasal bridge, refined margo piriformis inferior, marked canine fossa, deep incisura infrazygomatica. Dr. Oetteking is unable to decide whether or not these advanced features have come about as a result of environmental changes. He suggests however the probability of race mixture.

A mixture with precaucasid racial elements may have occurred already on Asian soil before the invading hordes migrated to this continent where they phaenotyped into the multifarious array of Indian tribal differentiation.

To the reviewer the great utility of this work lies in its exposition of anthropometric and cranioscopic technique. The aspiring craniologist should take this volume into the anthropometric laboratory and read Oetteking as he observes the morphological characteristics of skulls. There is no better compendium of cranioscopy. American anthropology will not soon produce another such exhaustive and exemplary anatomical and anthropometric study of a great series. Here, indeed, is technical perfection. What we have to look forward to is the devising of methods of analysis and comparison which will enable us to draw conclusions from such an admirable mass of scientific data as that accumulated by this erudite and painstaking scholar.

E. A. HOOTON

Körperbau und Geisteskrankheit (Physique and Mental Disease). MAX SCHMIDT. (Monograph. aus d. Gesamtgeb. d. Neurol. u. Psychiat., 56:1–206, 1929. Berlin: Springer & Co. RM. 22.60.)

This monograph is one of the outstanding contributions to the study of the relation between morphology and mental disorders. The author has made extensive

measurements on 200 schizophrenic and 167 manic-depressive patients in Copenhagen, and submitted them to exhaustive statistical study. Male and female patients are treated separately throughout the work. He has computed the average and degree of variation of each measurement and index for each of the disease groups, and also for series of pyknic, asthenic, and athletic cases derived from the material studied. He agrees in the main with the results of Kretschmer and his school, but, thanks to the way in which he has handled the material, he is able to reach some further very important conclusions. He furthermore devotes a chapter to a special discussion of those cases in which the body type is that ordinarily not associated with the psychosis: a group of cases which is small, but from every point of view important.

Racially important criteria, such as the cephalic index and body length, show no typical differences between the disease groups. The greatest differences between the groups are seen in weight and in circumferential and breadth dimensions of the trunk, which are dependent to a large extent on the state of nutrition. He believes that this is due in part to age, since the heavier manic-depressive group averages ten years older than the other; but also to constitutional factors, since parallel less marked differences show up in the head measurements. Head measurements are on the whole larger in manic-depressives, but the faces in this group are also seen to be significantly broader. The hands of the schizophrenic group are found to be narrower than in the other: this again is in part due to environmental factors, since hand breadth can be influenced by manual labor; but also to a tendency of this group to be hypoplastic, as illustrated by similar differences in the feet and ankles. Finally, it is very noteworthy that all measurements show a much greater breadth of variation in the schizophrenic group. This group includes almost all of the extremely variant individuals: in addition to the typical asthenics there are many excessively fat individuals in this class, who have endocrine disorders. The heterogeneity of this group and its tendency to vary in many directions has the effect of smoothing out the averages and bringing them near to the averages of the manic-depressives.

He takes a very conservative attitude with regard to the value of physical types in the clinic. He concludes that the frequency of exceptions to the rule make it impossible to correlate for practical purposes the type of disorder with the physical type. The course of the mental disease is more closely correlated with physique; typical asthenics are usually entitled to a more gloomy outlook, whatever the initial symptoms may be. Especially in extremely variant individuals is it possible to predict the hopeless course characteristic of schizophrenia.

A. M. BRUES

Zur Anthropologie der prähistorischen Griechen in Argolis, nebst Beschreibungen einiger älteren Schädel aus historischer Zeit. (On the Anthropology of Prehistoric Greeks of Argolis, and Descriptions of Several Older Skulls of Historic Time.) CARL M. FÜRST. (Lunds Universitetets Årsskrift, N.F., Avd. 2, bd. 26, no. 8;

Kungl. Fysiografiska Sällskapets Handlingar, N.F., bd. 41, no. 8, pages 1–130, 53 figures, 40 plates (Crania Argolica Antiqua). Lund and Leipzig, 1930.)

Since the elaborate and erudite work of the Swedish anthropologist lacks both a table of contents and an index, it may be well for a general informatory survey to begin the review with a table of contents in English from the German original text.

INTRODUCTION

		Pages
	Introduction	3–12
1A	Description of skulls and skeletal parts of Mid-Helladic time	12–41
	I From Asine	12–37
	II From Mycenae	37–41
1B	Listing and discussion of the observations upon the skulls of Mid-Helladic time	41–53
1C	Remarks on the types and races of Mid-Helladic time of Asine	53–61
2A	Description of the skulls of Mycenaen or Late Helladic time	61–95
	I From Mycenae-Kalkani	61–75
	II From Asine	76–78
	III From Dendra	78–85
	IV From Heraeum of Argolis	85–95
2B	Listing and discussion of the observations upon the skulls of Late Helladic or Mycenean time	96–106
2C	Remarks on the types and races of the Late Helladic skulls of Argolis	107–112
3	Description of the skulls of protogeometric, geometric, and hellenistic time of Asine	112–120
4	Anomalous and pathological changes in the bones of the prehistoric graves discussed	121–128
	Bibliography	129–130

The skeletal material here investigated was collected at Asine and Mycenae by the Swedish Archaeological Expedition to Greece (1922–1926), augmented by skeletal material from Mycenae-Kalkani collected by the British Archaeological School at Athens. The synchronization table on page 4 places the Mid-Helladic and Late Helladic periods on a level with the Egyptian Middle Empire and the eighteenth dynasty, and with the northern Neolithic and Bronze Ages, about 1800–1400 B.C. It is stated that no skeletal remains have so far been traced to Early Helladic time, and that the earliest skeletal finds in all Greece date back to Mid-Helladic graves of Mycenae and the lower city site of Asine, both situated in the ancient province of Argolis. The skulls from prehistoric Greece are, on the whole, in a fragmentary condition. A number of them were reconstructed from tiny parts, while some of the other skeletal parts were in a better state of preservation. All of them are from flexed burials.

The treatment of the material, as may be judged from the Contents, provides, in each of the principal divisions, for an individual description of the specimens, a discussion of the same, and conclusive remarks on the racial composition.

The principal cranial and facial measurements are assembled in tables, the Mid-Helladic on pages 40–41 and 42–43, the Late Helladic (including the protogeometric, geometric, and hellenistic periods) on pages 92–95; they attest the marked

metrical and type variation of the skulls under investigation. For a more comprehensive survey of the metrical conditions the reviewer has arranged the accompanying table of measurements, which contains some of the original metrical data in classificatory assortment. The Mid-Helladic material comprises 24 measurable adult skulls, of which 13 are male and 9 female, while 2 are of infantile age. The Late Helladic skull material (Mycenae-Kalkani, Dendra, Heraion, Asine, and the protogeometric, geometric, and the early hellenistic times) numbers 22 males, 20 females including one juvenile, and another juvenile. On account of the fragmentary state of preservation already mentioned, not all the specimens yielded to the measurements provided for in the author's tables.

Under the caption of "Crania Argolica Antiqua" the skull material which forms the subject matter of the present study is shown in excellent photo-gelatine reproduction on forty double-face plates.

FREQUENCIES IN THE CLASSES OF VARIOUS CRANIAL INDICES CONDENSED FROM FÜRST'S METRICAL DATA ON PREHISTORIC GREEK SKULLS

Cranial indices (*classified*)	*Mid-Helladic time*		*Late Helladic time*	
	Male	Female	Male	Female
L-Br Index				
Dolichocranial	3	3	8	6
Mesocranial	7	4	6	5
Brachycranial	2	–	1	5
L-H Index				
Chamaecranial	1	2	1	–
Orthocranial	4	–	5	2
Hypsicranial	1	–	–	1
Transverse Parietofrontal Index				
Stenometopic	4	1	3	3
Metriometopic	2	1	3	6
Eurymetopic	4	1	6	4
Upper Facial Index				
Euryenic	3	–	1	–
Mesenic	1	–	1	1
Leptenic	2	–	3	1
Nasal Index				
Leptorrhinic	3	1	3	1
Mesorrhinic	–	2	2	2
Chamaerrhinic	4	1	3	1
Orbital Index				
Chamaekonchial	5	–	–	1
Mesokonchial	4	2	5	3
Hypsikonchial	–	–	4	1

As regards the behavior of the crania, if judged by the index classes of the accompanying table, incongruence is an outstanding feature in Mid-Helladic time, with a slight tendency toward dolichocrany in both the males and females. This status is upheld to a decided extent in the male skulls of Late Helladic time, while the females frequent the three classes of the L-Br index in even numbers, to the excess, however, of one in the dolichocranial class. The L-H index indicates pronouncedly medium conditions. Quite incongruous, as hinted above, are the proportions between the cranial and minimum frontal breadth. The transverse parietofrontal index therefore accounts for its two extremes of an equal frequency in the Mid-Helladic males, both exceeding the metriometopic frequency while there is an equal distribution, however small, in the females of that time. In the Late Helladic time there is in the males an excess of eurymetopy to twice the amount of either steno- or metriometopy. In the females, on the other hand, there is a variable frequency in the index classes, metriometopy predominating. The upper facial index reveals in the successive times an advance from euryeny to lepteny. The nasal index again behaves very irregularly with only a slight indication of a mesorrhinic condition in the females of both periods, while leptorrhiny and chamaerrhiny occur at equal frequencies in excess of mesorrhiny in the Late Helladic males, chamaerrhiny predominating in the Mid-Helladic males. The orbital index, judging from our table, reveals a tendency toward chamaekonchy in the early period, toward meso- and hypsikonchy in the later. As to the interorbital proportions, answering to interorbital indices from 23–27, the author notes a "recht gleichmässige Verteilung bei einer gemischten Sammlung von Menschen" (p. 53).

The marked disharmony of craniometric findings reflects the racial composition of the prehistoric Greek of Argolis, who at those remote times was already strongly mixed, a condition characteristic of the Balkan peoples up to our days and which fully justifies the author's epithet "unerhört gemischt" (p. 128). The author establishes in Mid-Helladic time at least one definitely identifiable skull of Armenoid derivation and mentions in this connection another one from Crete described by Duckworth (*The Craniology of the Ancient Inhabitants of Palaikastro and its Neighborhood*. Appendix to Part 2. Meet. Brit. Ass. Adv. Sci., Rept. 82, 1912). He points out the possibility of an Armenian migratory route from Asia Minor by way of the then powerful Crete to Asine, one of her colonies on Greek shores. There are likewise indications of the Nordic, Mediterranean, and Egyptian (*Rhomboideus aegyptiacus* G. Sergi) types resembling the cranial variations obtaining in contemporary Crete (p. 61). From the more numerous occurrence of Nordic characteristics in Late Helladic time, particularly in the female skull, the author assumes that

> from the present skull material from Late Helladic time of Mycenae-Kalkani it cannot be proven that the majority of their owners belonged to the Nordic race, but it may be maintained that an objection cannot be raised against an identification of archaeological and anthropological finds (pp. 110–111)

thus showing the caution of the anthropological historian in the handling of problems still unsolved. A number of the male skulls display in shape and size a more

powerful appearance quite unlike the Mediterranean type and thus resemble the Swedish Neolithic type, ellipsoid and with strongly developed supraorbital eminences (p. 110, fig. 43). On the whole, the coast people appear considerably more variable than those inhabiting the heights of Argolis in close association of the then rulers and their followers. Enlarging on the racial movements of those prehistoric times of north and south Europe the author finds, by means of archaeological and anthropological research, that its results are conducive to a mutual relation, "eine gewisse Gleichzeitigkeit," between the various countries of Europe, assuming, e.g., that the Greek conquerors of Mycenaean times came from the north while the Nordic megalithic folk came directly or indirectly from the south as did the Nordic "Streitaxt- und Hockervolk" (p. 125). And it is these latter that brought northward an already mixed racial conglomeration.

The reviewer considers the present work of his Swedish colleague a valuable contribution to Greek anthropology, the output of which is on the whole quite meager, owing partly to the fragmentary condition of the recovered and recoverable skeletal material, a condition which also made the work under review one of hardship and intense effort. The few typographical and others errors count for naught in consideration of the painstaking labor and momentous results of the author.

BRUNO OETTEKING

MISCELLANEOUS

Geophagy. BERTHOLD LAUFER. (Field Museum of Natural History, Anthropological Series, vol. 18, no. 2, 1930. 98 pp.)

The practice of geophagy has, as Dr. Laufer points out in his introduction, been subject to much misrepresentation and misunderstanding. In this useful monograph he has, with characteristic thoroughness, reinvestigated the whole matter. Although commonly stated to be a general practice of whole tribes or peoples, it is, he believes, never such, but is essentially an individual habit. Yet although this statement is probably in general true, it hardly seems in accord with the accounts given for the Otomacs and other tribes of the Orinoco region. The habit of clay eating is today perhaps most prevalent in India, yet there is no evidence of its existence in antiquity, either there or in China or Mesopotamia. It was and is unknown in Japan, Korea, Polynesia (except New Zealand), southern South America, and considerable portions of Europe and Africa, including Egypt. It was not in use among either Greeks or Romans. Clay is eaten by addicts, either in its natural state or slightly baked. It was eaten as a substitute for ordinary food in times of famine, or as a condiment, as a delicacy, as a medicine, or in connection with religious rites. These various uses are considered in detail, and a large number of descriptions given, arranged in geographical grouping. Of special value are Dr. Laufer's extended discussions of geophagy in China and of the references to it in Chinese literature. A useful bibliography is appended.

R. B. DIXON

Death Customs; an Analytical Study of Burial Rites. EFFIE BENDANN. (New York: Alfred A. Knopf, 1930.)

This study is based upon data concerning death customs selected by the author from literature dealing with certain native peoples in India, Siberia, Australia, and Melanesia, upon the assumption that the items selected are true samples, first, of the geographical areas represented, secondly, of the world as a whole. The objective of the author is to explain the existence of the customs observed. The first part of the book attempts to review the contrasting methods used by other investigators, considering them in the main impotent, and upon the basis of these criticisms formulating a procedure to be followed in this instance. To quote, "We have endeavored to ascertain the history of definite phenomena by a purely inductive method." Then assuming that actual history has been established, the intention is to race about and proceed by deduction.

In Part 1 of the book, an abstract of published data is given for each area under the following topical heads: origin of death, causes of disposal, dread of the spirit, attitude toward the corpse, mourning, erection of a house, destruction of property, purification, power of the name, feasts, and future life. Each such category is treated separately, though the reader is cautioned that the distinctions are in a measure arbitrary, that functionally all such culture traits integrate. The controlling point of view in the above classification is similarity not only between the areas discussed but among the tribes within the areas. Thus the examples cited are to be taken as instances of uniformity in practice, or universality in distribution.

Part 2 places the emphasis upon differences observed within the areas and even the tribes concerned. Thus, data are given to show that the procedures in mourning vary according to rank, sex, age, etc. Similar statements of fact are given under headings comparable to those just enumerated for Part 1.

Each chapter in the book is accompanied by interpretations and occasional theoretical explanations. Among the many interpretations offered we find the following: a greater variety of native explanations is offered for specific disposals of the dead than for other procedures. Possibly this means that the disposal trait also varies most, but the book is not clear upon this point; yet we are told that of the many ways of disposal, cremation heads the list for the areas considered. In the modification of death customs, physical environment is considered a negligible factor. In the final discussion it is stated that the data on similarities are a true sample of the world and justifies the conclusion that there has been "a uniform line of development" which if unopposed would result in universality. On the other hand, the differences noted are to be explained as due to local social influences. Anyhow, the author states that probably no one of the specific death complexes can be taken as arising independently, but as due to the integrating of other existing traits.

The conclusions are not clearly stated in the text and were possibly so intended since we are told that "the conclusions are tentative, and that much remains to be done along the lines already laid out" (page 16). Nevertheless, the reader will be repaid for going through the book, particularly if experienced in anthropological research.

CLARK WISSLER

Légendes sur les Nartes, suivies de cinq notes mythologiques. GEORGES DUMÉZIL. (Bibliothèque de l'Institut Français de Léningrad, v. 11, 1930.)

Professor Dumézil has summarized in French all available Russian texts dealing with the Nartes. These are a race of giants supposed to have occupied the Caucasus prior to the present populations. The tales and their variants represent five groups of people, the Ossetes, the eastern and the western Circassians, the Tatars and the Chechen. In the legends appear many motives treated by European folklorists. Of wider anthropological interest are the five appended notes. Number 1 discusses the possibility of connecting the Ossetes with the Scythians of Herodotus; 3 and 4 deal with traces of storm and solar myths still discernible in the local legends; 5 indicates certain Persian and Russian elements attributed to Caucasian tales. The author believes that the influence of the former is real, whereas similarities with the Russian are incidental or fortuitous.

CORA DU BOIS

Orpheus, Myths of the World. PADRAIC COLUM. (New York: Macmillan. $5.00.)

Padraic Colum has retranslated representative myths from seventeen peoples in this handsomest of gift books of mythology, illustrated by Artzybasheff's striking and beautiful engravings. The volume stands out from most other popular collections in that it was not prepared especially for children. Mr. Colum has chosen rather tales from the Kalevala, the Haggadah, the Ramayana, and the Mahabharata, stories which represent the myth-making faculty in its serious mood.

There is little primitive material included. Stories from Peru were apparently selected in order to give representation to the higher civilizations of the New World; the stories themselves are rather savorless. The ones from the Popul Vuh and Sahagun give Middle America and Mexico a better representation. Besides these, the only primitive myths are a couple of Maui stories from the Maori, Pele from Hawaii, and a part of the Cushing origin tale from Zuñi. This last Mr. Colum has toned down a little, but it is still in the style of "Pull not our feathers, O ye of hurtful touch," etc. It corresponds to nothing that belongs to Zuñi, and is not a good enough invention on its own account to merit a place as English literature.

RUTH BENEDICT

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REPORTS

Report of the Auditing Committee

The report of the Treasurer for 1930 has been examined and found correct.

(Signed) A. L. Kroeber
(Signed) E. M. Loeb
Auditing Committee

March 16, 1931.

Appendix

The undersigned adds the following:

The Treasurer's report properly accounts for all receipts and disbursements of the Association. It also lists clearly budget allowances and net expenditures, showing that the Association has kept well within its budget. However, the general report includes not only normal, recurrent income and expenditures, which range around $6000, but special, non-recurrent items like the Index, and "paper" expenditures covered by reimbursements (Memoirs, extra reprints, etc.), which bring the total up around $11000, or, including cash balances, about $14000. Essentially however it is only its more or less regularly recurrent income and obligations which the Association can count on in planning its course. For this reason, I have extracted from the books of the Association, with the aid of the Treasurer's assistant, all entries of such recurrent nature during the past three years, and submit herewith a summary of them.

Regular Recurrent Income and Expenditures

Income

	1928	1929	1930
Memb. dues from affil. soc. at $5	$1145.50	$1166.00	$1653.50
Memb. dues. collected directly at $6 (less subscr. commissions)	3664.05	4000.22	3756.84
Total dues	4809.55	5166.22	5410.34
Sales of publications	843.00	535.15	533.42
Interest and royalty	131.50	148.50	153.00
Total	$5784.05	$5849.87	$6096.76

Expenditures

American Anthropologist, printing and illustrations.			
No. 4 of preceding year (part)			634.09
Nos. 1–3 of year	$2378.34	$2918.41	$2904.11
No. 4 of year, part		646.32	538.84
No. 4 of year, whole	759.88		
No. 1 of next year	125.24		65.90
Total	$3263.46	$3564.73	$4142.84

Anthropologist and Memoirs (distrib., storage, insur., net cost gratis reprints)	455.36	521.79	507.29
Memoirs Print. & ill. pd. by Assoc.	61.85		539.72
Total account publ.	3780.67	4086.52	5189.95
Sec'y, Treas. & Ed's. offices	1344.41	1187.07	1141.74
Reprinting and purch. of out-of-print publications	92.27	79.90	118.28
Total	$5217.35	$5353.49	$6459.97
Surplus carried over	$ 566.70	$ 496.38	
Deficit			$ 363.21

From these figures it can be inferred that the regular income of the Association is about $6,000; that toward the end of a period of general prosperity and after several years' membership campaign by the Treasurer it was increasing around 3% annually; and that with a general depression still in force and the membership campaign practically suspended, an increase of regular income above $6000 is less likely than a decrease.

As against this income, the Association voted a budget for 1930 of practically $7000, and for 1931 of nearly $6400.

This surely is unsound policy. If this opinion needs further substantiation, it will be found in the facts that the Association's cash working balance (excluding the Permanent Fund and Index Fund) decreased during 1930 from $2982 to $2517; and that whereas 1928 showed a surplus of regular income over regular expenditures of $566, 1930 showed a corresponding deficit of $363.

Another way of expressing the situation is by pointing out that whereas from 1928 to 1930 regular income increased only slightly over $400, regular expenditures increased well over $1200.

For this situation the Treasurer is in no sense responsible, since he only carries out the Association's instructions. The cause of the condition is obviously lax planning by the Association.

Fortunately, the increase of outlay is not in the direction which so many scientific bodies have followed in recent years, namely administrative overhead. From 1928 the cost of conducting the offices of the Secretary, Treasurer, and Editor actually decreased nearly $200 ($1344 to $1152); and in 1930 the same offices spent $261 less than the Association's budget allowed them.

The increased cost is wholly due to publishing, which mounted $1400 in the two years. Of this increase about $900 was on account of the Anthropologist, $500 on account of the Memoirs.

The total cost to the Association of furnishing authors with 25 gratis reprints was $304.37 in 1930. This seems a legitimate expenditure, as well as a wise one in view of the fact that a gradually increasing number of journals are paying contributors for

articles. Depriving authors of the minimum number of gratis reprints might well result in a lowering of quality of Anthropologist articles.

The Editor's office and assistance expenses in 1930 were $544, that is, slightly over 10% of the sums paid the printer, or slightly under 10% of the total direct and indirect outlay on account of publishing ($5189.95 plus $543.96 equals $5733.91). This seems a legitimate proportion.

The following recommendations are submitted to the officers and Council:

1. That until conditions have given positive evidence of substantial improvement, the Association rigidly restrict its budget for regular purposes to a maximum of $6,000.

2. That the Association return for the present to the policy of contributing nothing to the cost of Memoirs under any circumstances.

3. That officers be encouraged to continue the practice of rigid economy in administrative expenses.

4. That the Treasurer be requested to include hereafter in his annual reports a statement of regular recurrent income and expenditures for the year reported on plus the two to four years preceding, for the information of the Association in planning its policies and budgets.

(Signed) A. L. KROEBER

ARCHAEOLOGICAL FIELD WORK IN NORTH AMERICA DURING 1930

This compilation for the year 1930, which is the ninth of a series of such summaries published in the American Anthropologist, is composed of statements sent for this specific purpose to the office of the Committee on State Archaeological Surveys of the Division of Anthropology and Psychology of the National Research Council by representatives of the several organizations doing archaeological field work in North America. It is published in order to acquaint anthropologists with the progress of such field research on this continent within a relatively short time after it has occurred. The number of statements included and the limitations of space make possible only a very brief description of the work and results of any one field party. More complete reports will be printed in the usual publication media of the organizations concerned. The Committee wishes to thank the individuals and organizations that have made this review possible through their cooperation, and requests that any group which has been inadvertently omitted communicate with the chairman.

The West Indies. An archaeological survey of the Dominican Republic under the direction of Dr. Wetmore, aided by a subvention from Dr. W. L. Abbott, was initiated by the U. S. National Museum in 1928. The third season's work, extending from January to May, 1930, included the excavation of an Arawak village site and cemetery at Andres on the Caribbean coast, 30 kilometers east of Santo Domingo City, in the province of Santo Domingo. A reconnaissance was later undertaken in the interior provinces of La Vega and Azua, much of the work being in the heart of the central Cordillera in the vicinity of the valley of Constanza. Much attention

was paid to the recovery of biological material from kitchen-middens, resulting in the discovery of mammalian species. Collections of human skeletal material and of Arawak artifacts, principally of stone and earthenware, were made for the U. S. National Museum. Stratigraphical studies could not be made, due to uniformity and shallowness of midden deposits.

Walter Hough,
U. S. National Museum

Canada and the Maritime Provinces. Mr. Frederick Johnson, working under the auspices of the Museum of the American Indian, Heye Foundation, visited Nova Scotia during the past summer, where he obtained considerable ethnological data. The archaeological side of the expedition's work was confined to locating a camp site on Cape Breton island and several sites near Merigomish. A number of celts, gouges, and arrowheads were collected from the latter locality. Although the sites in this region do not yield many specimens, they are of great value in view of the recent theories of the sequence of cultures in eastern and northeastern North America.

G. G. Heye,
Museum of the American Indian
Heye Foundation

In August Director Fox was in charge of the archaeological work of the Commander Eugene McDonald-Warren Foundation MacGregor Bay Archeological Expedition. The field of work was largely on LaCloche island, Georgian bay region, where an Indian cemetery of the fur trade period was excavated. On an adjacent tract a prehistoric burial was found in a low sand dune beneath a huge cairn of limestone slabs. Much material was recovered and is in the Chamberlain Memorial Museum.

George R. Fox,
E. K. Warren Foundation
Three Oaks, Michigan

Alabama. The members of the Alabama Anthropological Society have continued gathering material in the neighborhood of Montgomery and in the Tennessee valley. Fifty burial urns have been taken from sites along the Tallapoosa and Alabama rivers. A smaller, but more highly developed, type of pottery is being found. Two examples are effigy bowls, one of a duck, the other of a human figure, found in a site at least eighty miles east of Moundville. They are of local clay, and shell tempered, apparently made by the same people who manufactured the highly polished, grease glazed shallow bowls along the lower Tallapoosa river. More than 100 pottery pipes have been found at one locality. The collection of pottery designs on sherds, which now totals 300 patterns, is being drawn by Dr. R. P. Burke for "Arrow Points." The Society is displaying several collections at the Woman's College of Alabama Museum, which opened its doors on April 29, 1930.

Peter A. Brannon,
Alabama Anthropological Society

Alaska. Dr. Ales Hrdlicka's explorations for 1930 were pursued on the Kuskokwim river in Alaska. This large river, heading in Mt. McKinley, formerly had a considerable Eskimo population, and many remain in the region at present. Dr. Hrdlicka was enabled to secure from village sites along the river a large and important collection of skeletal remains and many specimens throwing light on the culture of the Kuskokwim Eskimo. A valuable series of measurements on the living was made by Dr. Hrdlicka, together with observations on the present condition of the Eskimo.

Walter Hough,
U. S. National Museum

An archaeological survey of the Prince William Sound and Cook Inlet regions of southwestern Alaska was made during the summer of 1930 by Frederica de Laguna and Wallace de Laguna, assistant, under the auspices of the University of Pennsylvania Museum, assisted by the generosity of Theodore de Laguna, and several other donors. Collaboration with Dr. Kaj Birket-Smith of the National Museum of Copenhagen had been planned, but illness unfortunately prevented him from going into the field. In Prince Willaim Sound about twenty pre-Russian village sites, out of fifty or more reported by natives, were explored. The shell heaps marking these early settlements yielded a culture not very different from that of the period immediately preceding and following the Russian conquest. While the culture is basically Eskimo, it reflects to a strong degree the influence of the Northwest Coast Indians. About twelve archaeological sites, mostly in the middle and southern part of Cook inlet, were investigated. Two cultures are represented: one very old, similar in many respects to that of the Eskimo of Kodiak and Prince William sound, and characterized by decorated stone lamps; the other, more modern, of late pre-Russian and Russian times, basically Athabascan but showing Eskimo influence. The problem before us is to determine the relationships and geographical distribution of these cultures, and in particular to assign to their proper place the carved stone lamps with a human figure in the bowl.

J. Alden Mason,
Museum of the University of Pennsylvania

Arizona. In January and February, 1930, an aerial survey of the prehistoric canals bordering the Salt and Gila River valleys, central Arizona, was made by a joint Smithsonian Institution-War Department party in charge of Neil M. Judd, Curator of Archaeology, United States National Museum. Several hundred photographs, taken from a height of 10,000 feet, were later assembled into mosaic maps of the two river courses. These were turned over to Mr. Odd S. Halseth, who is doing the ground work of tracing out the canals and indicating them on the maps of the region. Aerial photography offered the only means whereby these once extensive canal systems could be retraced for purposes of permanent record. It has been estimated that sixty years ago, when modern agriculture first began to encroach upon the deserts of Salt River valley, no fewer than 400 miles of prehistoric main line

canals and laterals were still plainly visible. Most of these have since been so completely obliterated through extension of cultivated fields that traces of them are no longer evident from the ground. At an elevation of several thousand feet, however, their former courses were plainly visible even though the ditches themselves had been filled and leveled. Perhaps nowhere else in the world did primitive farmers construct and maintain such vast irrigation systems with no beasts of burden and no metal tools.

Walter Hough,
U. S. National Museum

The Department of Archaeology of the University of Arizona and the Arizona State Museum devoted a part of the field season to uncovering an interesting group of ten mounds some three hundred feet south of Martinez hill, and ten miles south of Tucson. Those of the mounds uncovered this first season present two periods of human culture. In the earlier period, the clay and caliche walls of the partly sunken rectangular chambers were 12 to 18 inches thick, and six to nine small post holes in the well-packed clay floors indicated the method of roof support. In the later, more pretentious structures, the rooms were much larger, the walls more massive (24 to 30 inches thick), and the post holes greater in diameter. Some of the exterior walls of the later structures were reinforced by outer walls built against the earlier ones two or three different times. These reinforcements, together with the quality of sediment found inside of the walls, show that the structures had been flooded, and fine, water-washed mud, sand, and gravel deposited. In two of the mounds now in the process of excavation, walls of clay and caliche are found just under the surface, indicating a superstructure on the same site, the base of whose walls being eight feet above the floor of the first habitation. In the light of our present knowledge, these ruins seem to occupy a transitional stage between the rectangular pit-house villages so common in this region, and the compound structures found in the Casa Grande and Phoenix areas. The pottery indicates a development from the early rough, plain ware through the various stages of red-on-buff, with a very meager suggestion of the Gila polychrome.

During the hot summer months, ten weeks were spent in northern Arizona; three of them on a mesa ruin east of Navajo mountain and near its base. The ruin consists of three main groups, in the oldest of which are pit-house rooms and others showing the transition from the pit-house to the surface type found in the second and third groups. In the oldest section are open courts within the enclosing walls of which are no indications of rooms, but some evidence of wooden shelters. The presence of mealing bins and fireplaces imply that these courts were community kitchens and workshops. The floors in some of the circular kivas of the later structures had been pecked out of the shaley rock, which in two of them formed a portion or the whole of the low bench. The outer opening of the shaft was not carried to the top of the wall, but merely to the surface of the ground. The pottery ranges from plain gray and crude indented coiled wares in the oldest section of the village, to good indented coiled, black-on-white, and black-on-red wares in the later and better

constructed sections. Ten days were devoted to studying two small cliff ruins in Long canyon, a branch of Nitsie canyon. They are of the early cliff pueblo type, with an abundance of wattel walls and walls of adobe brick. The textiles and pottery found were characteristic of the region, good twilled yucca baskets and mats, and excellent black-on-white pottery with occasional sherds of black-on-red and "kayenta" polychrome wares.

Byron Cummings,
Arizona State Museum,
and University of Arizona

The Medallion began the year by extending the quest of red-on-buff traces to the Upper San Pedro and northeastern Sonora; about 100 ruins were visited, described, photographed, and sherd collections made. This work was resumed in the fall and will be carried on through the winter.

With the advent of hot weather, the field parties moved up to the Grand canyon, where a ruin was excavated near Navajo point at which our second Wayside Museum will be built, to be donated to and administered by the National Park Service. During the summer, 600 ruins were visited, described, photographed, and, whenever possible, five collections of sherds were made; of these, one will remain in the Wayside Museum, one has been added to the collections at Gila Pueblo, and one each has been given to the University of Arizona, the Laboratory at Santa Fé, and the Museum of Northern Arizona at Flagstaff. The region covered in these operations included the Navajo Mountain country, the north and south rims of the canyon, and the western border of the Little Colorado basin through Flagstaff and south and east along the Mogollon plateau.

Since returning to Gila Pueblo in September, Emil Haury, who has joined the staff, has spent three weeks on a pack trip in the Sierra Ancha in search of prehistoric beam material, returning October 15th, with about 150 specimens by means of which it is hoped to be able to date the Salado culture. In November, the excavation begun last summer of the Rye Creek ruin in the Upper Tonto was completed.

Harold S. Gladwin,
The Medallion

The Museum of Northern Arizona maintained a party in the field under the direction of Mr. Lyndon L. Hargrave from May 1st to October 1st, 1930. The project involved a study of Pueblo II in the San Francisco Mountain area. In May a study was made of ruins in Lower Walnut creek, where the Wilson pueblo, lying 25 miles east of Flagstaff, was excavated. This pueblo, an early Pueblo III site, was built around a one-roomed Pueblo II structure which was restored. Five other small sites in the neighborhood were investigated. In June the party moved to Flagstaff and excavated two Pueblo II mounds, two miles north of that town. After completing this work, a new base camp was established near Deadman's flat, 20 miles north of Flagstaff. Completion of the work at Medicine cave, which was begun in 1928, was followed by the excavation of a second dry cave. The rest of the season

was devoted to the study of sites in the open, and included the excavation of a Pueblo II fort, five Pueblo II pit-houses, one Pueblo I pit-house, two Basket Maker III pit-houses, and two vestibule houses. Test pits were sunk to the floor in ten other Pueblo II pit-houses. The general conclusions reached are: (1) In the San Francisco Mountain area are Basket Maker III, Pueblo I, and Pueblo II rectangular pit-houses differing only in minor details. (2) Sixteen of 18 pit-houses opened having been destroyed by fire, much datable pine charcoal was collected, from which Mr. John C. McGregor has built a chronology of 150 years. (The Museum entertains the hope that Dr. A. E. Douglass will be able to lengthen this chronology before the preliminary report of the summer's work is completed.) (3) The vestibule house, reported by Colton (1920) belongs to Pueblo II, and is an adaptation from the rectangular pit-house with the substitution of an entrance passageway for the ventilator. (4) The floor of the vestibule house may be below the level of the surface, on the surface, or even on top of an artificial mound, often as much as two feet above the ground. (5) The earliest masonry structures in the region were forts and granaries. (6) The last eruption of Sunset crater, the last active volcano in the region, occurred in early Pueblo II.

Besides the work recorded above, Miss Katharine Bartlett and Dr. Colton extended the archaeological survey around the San Francisco peaks by locating about 100 new sites, and Dr. Colton and Mr. Hargrave added 24 new sites to the survey of the Hopi country, among which were two Pueblo IV ruins. The base map of the Hopi country for the archaeological survey has been completed. It is 8 feet by 10 feet, with a scale of $1\frac{1}{3}$ inches to the mile. The base maps of the San Francisco mountains are constantly being revised.

Harold S. Colton,
Museum of Northern Arizona

The Eighth Bernheimer Expedition of the American Museum of Natural History, led by Mr. Charles L. Bernheimer and Earl H. Morris of the Carnegie Institution of Washington, made an archaeological reconnaissance of the Carriso-Lukaichukai district of northeastern Arizona and northwestern New Mexico, locating new and important sites definitely referable to specific culture periods and thus extending our knowledge of a hitherto archaeologically unknown area. Three drainage systems were carefully examined: the Red Wash, Tse-gi-ho-chong, and Hos-pi-ti-bito, in which were found Basket Maker II and III sites as well as sites assignable to Pueblo I, II, and III. The district, as a whole, however, cannot be considered to have been a culture center, the Pueblo as well as the Basket Maker groups, though typical, being outlying settlements.

Clark Wissler,
American Museum of Natural History

Although the main objective of the National Geographic Society's three beam expeditions was realized in the fall of 1929 with the determination of a date for Pueblo Bonito, Dr. A. E. Douglass has nevertheless continued his tree-ring investi-

gations throughout the past year. Dr. Douglass is now preparing a report covering these particular researches in so far as they pertain to southwestern ruins. Messrs. E. W. Haury and L. L. Hargrave, in a Smithsonian Institution publication now in press, describe their 1929 excavations from which charred beam material was recovered to complete the Douglass chronology. The four ruins examined in part, all lying within the Little Colorado River drainage, Arizona, have previously been reported upon by archaeologists. The joint Haury-Hargrave paper briefly reviews their respective observations in relation to the dated timbers recovered.

Neil M. Judd,
National Geographic Society

The Van Bergen-Los Angeles Museum Expedition continued the field work on the Gila valley site begun by the expedition last spring. Another cremation area has been located and some 25 to 30 cremation pit burials have been uncovered. Several house sites have also been laid bare. Upon completing the work at this site, the party will return to the compound site on the Casa Grande National Monument, which has been uncovered but not dissected. Following the completion of the compound site, Dr. Van Bergen expects to continue following traces of earlier sites already located some thirty miles from the present scene of operations.

Arthur Woodward,
Los Angeles Museum

Arkansas. During the season of 1930, the University of Arkansas Museum continued its excavations on the Upper Ouachita river. The evidence secured suggests that this region was inhabited by members of the Caddoan tribes who lived in the southwestern part of this state. The collections consist almost entirely of pottery specimens, with many gourd-shaped vessels that seem to be peculiar to this region. In some cemeteries large, very fine, chipped mortuary knives were common. No marine shell objects were found here, a condition in sharp contrast with that to be found in the adjacent river valleys. This culture is entirely pre-Columbian, for no evidence of white traders' articles has been found.

S. C. Dellinger,
University of Arkansas

California. During the spring months of 1930, the San Diego Museum continued, by means of a series of short trips, the archaeological survey of the California side of the lower Colorado basin. The months of July and August were spent on San Nicolas island, where satisfactory results were obtained despite the fact that this small island has been a veritable playground for the relic hunter for over fifty years. A stratigraphical sequence was worked out for three distinct cultures. The island's first inhabitants seem to have subsisted chiefly on land snails and their middens rarely contain any marine shell species. Fully as strange was the fact that only hearths, and no artifacts, were found in these middens. This horizon has every

indication of extreme antiquity. The decomposition of enormous areas of land snails has produced a characteristic basal stratum of calcareous tufa in many parts of the island below which some hearths were found. The middle period was that of the well-known Canalino culture, characterized by inhumation, but during the third and last period, cremation displaced inhumation. The latter part of the year was devoted to continuing the survey work in the Mohave desert from the point reached in 1928.

Malcolm J. Rogers,
The San Diego Museum

The Southwest Museum carried on a reconnaissance and some excavations in certain caves in San Bernardino and Riverside counties, California, during 1930. This was in charge of Mr. and Mrs. W. H. Campbell of Twenty-Nine Palms, who succeeded in finding pottery vessels, baskets, and implements of wood and stone, most of which can probably be attributed to the Kawia Indians who occupied this territory before the coming of the whites, although a few objects may have been made by earlier peoples. Further work is required to straighten out this point, and this will be undertaken by the Campbells in 1931.

M. R. Harrington,
The Southwest Museum

Colorado. Mr. Richard M. Snodgrasse, a special field assistant in the American Museum of Natural History, continued his archaeological reconnaissance of the preceding season, searching for possible extensions of the Folsom culture in Colorado and Wyoming.

Clark Wissler,
American Museum of Natural History

The Field Museum of Natural History sent an archaeological expedition to southwestern Colorado last June to excavate the Lowry ruin. Dr. Paul S. Martin, Assistant Curator of North American Archaeology, led the expedition, which was financed from the Julius and Augusta Rosenwald fund. The ruin is a large mound 200 feet long, 100 feet wide, and 25 feet high. Eleven rooms and a kiva were excavated during the three summer months. Fragments of paintings were found upon the kiva walls, which had been built upon an older kiva. The site was occupied during three periods, the last of which was either Pueblo II or early Pueblo III. Some burials were found of the earlier periods. The collections made include the usual variety of smaller objects, 70 vessels, and samples of timbers, a study of the rings of which it is hoped will aid in dating the ruin.

S. C. Simms,
Field Museum of Natural History

Florida. Mr. M. W. Stirling continued his archaeological investigations on the west coast of Florida during the latter part of February and all of the month of

March. The first portion of this exploration consisted of a trip through the Ten Thousand Island region for the purpose of mapping such archaeological sites as it was possible to locate in this area. Excavations were conducted on a mound on Horrs island. The second phase of the work consisted of the nearly complete excavation of a large sand mound at Safety harbour, located at the head of Old Tampa bay. This site, which lies on the margin of the territory occupied by the Caloosa Indians on the one hand, and the Timucua on the other, was evidently occupied at the time of the first Spanish contacts in Tampa bay. A large collection of skeletal material was obtained as well as artifacts fairly representative of the material culture of these Indians. Ornaments and utensils of shell, stone, and bone; pottery, tobacco pipes, and trade objects of European origin were among the articles collected.

M. W. Stirling,
Bureau of American Ethnology

Illinois. Exploration by the University of Illinois during 1930 has led to the discovery of a complex village site on Plum island, in the middle of the Illinois river just opposite Starved Rock State Park, near Utica, Illinois. A succession of fire and refuse pits, from three to five feet deep, sunk from different floor levels, and so shouldering upon one another as to imply a succession of occupations of the village site with a continuation of the pit-digging custom from an ever-rising residence level, in association with a variation in pottery techniques and designs greater than might be expected in a continuous development of one culture sequence, combine to indicate the possible existence of stratigraphic data on those cultures which occurred along the Illinois river at different times. On the north side of the river, further excavation of the Mitchell group of mounds, begun in the fall of 1929, has revealed some interesting details as to structure and burial customs. The implication is that of a long cultural development *in situ* with secular changes through diffusion of new ideas, yet still preserving a fundamental substratum of features which remain to the most recent mounds. One mound, which is specifically different from all others in the group in content and structure, when considered geologically from the study of soil profiles and leaching, is thought by Dr. M. M. Leighton of the State Geological Survey to be much older than the remaining mounds examined. At the close of the season, early European burials, with silver ornaments and trinkets of the kind traded to the Indians, have been found intrusive in a mound of the "special black mould" type. As yet, there is no clear indication that the intrusive Indian burials might have been historic. The Adler mounds studied by Langford at Joliet are clearly associated with the Utica culture. Yet the persistence of local peculiarities in communities separated by only a few days' march is very striking. In southern Illinois, the summer season yielded, through survey and reconnaissance, the location, tabulation, and description of over 600 mounds in the Wabash valley, as well as numerous village sites, stone circles, "forts," rock-shelters, petroglyphs and pictographs.

A. R. Kelly,
University of Illinois

The University of Chicago entered its fifth season in Illinois archaeology with ten of its own graduate students and five Fellows from the Laboratory of Anthropology in the field party led by Dr. Fay-Cooper Cole. Following a two-day conference in Chicago, the party located near Lewistown in the Illinois River valley. Two members of the group at once began survey work in Fulton county, while the balance of the party concentrated their attention on a large hilltop mound. Each Sunday morning the results of the week's work were discussed and methods criticized. One hundred and fifty skeletons, numerous flint blades, arrowheads, shell beads, bowls, pipes, and similar artifacts were discovered, as well as objects of copper. All three of the bluff cultures of the region were encountered in one mound, and their age relative to one another determined. Two large Hopewell mounds were opened in the river valley, one of which contained two log-covered tombs and a central burial pit, together with single unprotected burials. The central portion had been surrounded by small poles, as was evidenced by the pole imprints in the soil. A second Hopewell site was opened near Liverpool. Here local excavators had previously encountered log tombs enclosing skeletons and objects typical of this culture. Below the mound proper was a layer of dark sand averaging three and a half feet in thickness resting upon river gravels deposited during extremely high water levels. In the sand, usually near the bottom, were found nine skeletons of different physical type from those in the mound above or in the bluff cultures. The latter were consistently round heads, while those in the sands ranged from middle to markedly long heads. Collections of unworked stones often overlaid or accompanied such burials. The finding of these long heads beneath this mound is the more significant as they have been previously encountered under similar circumstances by George Langford beneath the Fisher mounds near Joliet. Several interesting cases of pathology were found, the most important being a case of osteitis fibrosa, perhaps the first to be described from a prehistoric Indian burial.

Fay-Cooper Cole,
University of Chicago

Indiana. The archaeological field work of the Indiana Historical Bureau during the summer of 1930 was confined to a survey of the counties along the west fork of White river, starting in Randolph county. Frank M. Setzler began this survey June 16th, and completed Randolph, Delaware, and Madison counties before August 10th, when he resigned to accept a position in the Smithsonian Institution. Fred R. Eggan, of the University of Chicago, succeeded him as field director August 11th, and remained in charge until September 27th, when work was closed for the summer. Mr. Eggan conducted a survey in Hamilton and Marion counties and began a survey in Morgan county, which is still incomplete. In each county, an examination of known archaeological remains and mounds, and a search for unreported village sites and earthworks were made. In addition, all collections, so far as possible, were photographed and a brief classification made of their contents.

A tract of land, embracing some two hundred and fifty acres and containing

mounds on the left bank of White river, three miles above Anderson, which have long been regarded as the most striking prehistoric earthworks in Indiana, were deeded to the state on October 7th by the Madison County Historical Society, which purchased them through a county bond issue.

Christopher B. Coleman,
Indiana Historical Bureau

Iowa. As in 1929, field work, both for the purpose of locating new sites and visiting the many active collectors, received more attention than was given to manuscript preparation. Inasmuch as there have been some attempts, partly by persons within the state and partly by outsiders, to commercialize certain of the state's antiquities, it was felt that a personal visit to collectors and students might encourage them to resist all forms of exploitation. The field work has proved profitable in respect to the amount of new information acquired, and apparently also in respect to an improved morale among those interested in the state's archaeology. Ten collectors have turned over their entire collections to the State during the last two years. The field work, though rapid, was also fortunate enough to obtain ample evidence of a fifth prehistoric culture for Iowa in a series of sites scattered along the Missouri bluffs in the southwestern part of the state. Materials examined in Lincoln and Omaha five years ago would indicate that the key to this culture is likely to be found in Nebraska. During June, about half of a rock shelter at the palisades of the Cedar river in Linn county was excavated. The many potsherds and other artifacts recovered indicate, as do the known contents of other rock shelters in east central Iowa, occupation by a Woodland, or Algonkian, culture.

Charles R. Keyes,
State Historical Society of Iowa

Michigan. Mr. Fred Dustin, of Saginaw, acting as special agent for the Museum of Anthropology of the Unversity of Michigan, spent parts of July and August on Isle Royale in Lake Superior, completing the archaeological survey of this island begun the year before. Mines, villages, trails, and waterways were studied and recorded. Dr. W. B. Hinsdale, of the same museum, made a number of short trips to various parts of Michigan in the interests of the forthcoming Archaeological Atlas of the state.

Carl E. Guthe,
University of Michigan

During the season of 1930, several trips were made to the site in the Warren Dunes where, apparently, a village site is emerging from beneath a dune as the sand moves on. Some excavation work was done by Assistant Barton and Robert Burgh. The site appears to be on an old beach at the Algonquin level.

George R. Fox,
E. K. Warren Foundation,
Three Oaks, Michigan

Mississippi. During the summer months of 1930, Moreau B. Chambers carried on investigations near Natchez in Adams and Jefferson counties for the Mississippi Department of Archives and History. At the beginning of the season, a small burial mound at Fatherland, two miles southeast of Natchez, was excavated. The presence of many objects of French manufacture assigns the erection of this mound to the first quarter of the eighteenth century. The pottery found is of good quality, and the well-executed scroll designs observed on the excavated vessels occur also on sherds from an historic Natchez village site across the creek. A short wooden chest held two compressed burials—six were in a similar chest; the other seventeen burials were extended on the back without coffins, and with no uniform orientation. Several days were spent in the Anna mound group in Adams county and among the Ferguson mounds on the edge of Jefferson county, both above Natchez. Ten other mounds were opened in the Natchez area. The character of the potsherd collections obtained indicates that the other mounds and sites visited during the season represent cultures much older and quite distinct from those of the historic Natchez found at Fatherland. For a few days in January, 1930, and later on in December, in cooperation with Henry B. Collins, Jr., of the U. S. National Museum, M. B. Chambers and James A. Ford excavated three house rings on a prehistoric site at Deasonville, Yazoo county, five miles west of the Big Black river. The largest house, with a diameter of sixty feet, consisted of three concentric circular trenches, in which post holes occurred at regular intervals. Additional post holes indicated the existence of an inner square inclosure. The fire-pit and the outer trench were filled with village refuse in which were found sherds of red-and-white painted pottery, charred corncobs, worked antler objects, animal bones, etc. Two somewhat smaller rings at the site revealed traces of inner walls. The entrances to these houses faced west. It is possible that this site is early Yazoo.

Dunbar Rowland,
Mississippi Department of Archives and History

Nebraska. The University of Nebraska Archaeological Survey, cooperating with the Smithsonian Institution, did intensive excavation work from June 11 to September 6, 1930. In addition, some 25 week-ends were spent in excavation and survey work prior to cold weather. Work was prosecuted on the Missouri river (between Nebraska City and Omaha), in the Republican River valley (between Guide Rock and Alma), in the Loup River valley (near Miller), and on the Platte river (near Ashland). A considerable range in time is suggested by the various sites. In the Loup valley an unnotched, well-worked, flint point was found under 16 feet of loess in contact with a fossilized and extinct species of bison. The circumstances of the find preclude absolute certainty, but a high probability of association is implied. Near Ashland, the association of crudely worked flints and fragmentary fossilized bones in re-deposited gravels also suggest considerable antiquity. Another nonceramic site appears to be a series of burial mounds near Nehawka containing disintegrating flexed burials and flint artifacts. The earliest ceramic culture yet noted

is an extensive buried village previously described by Sterns (AA 17:1, 121–127, 1915). Our investigations have revealed small, reed-thatched houses (shape as yet undeterminable) buried under 15 to 20 feet of washed-in soil. Considerably later than this culture, but entirely prehistoric, are the numerous large house-pits along the bluffs of the Missouri and lower Platte rivers. Two villages of this culture were investigated and six houses excavated. No burials or cremations of this culture have been encountered by the Survey. The houses are semi-subterranean and square in outline. Pottery is abundant. Some of the artifacts from these houses find close parallels in a new prehistoric culture from the Republican River valley, marked by groups of low mounds rather than pits. The one house completely excavated was square in outline. Unlike the square houses on the Missouri, the walls contained post molds, an east and a west entrance, and some of the internal cache pits were lined with rock slabs. A hilltop ossuary of this culture was also excavated. Here, in a large pit, fragmentary human bones were mingled with potsherds and some interesting antler, shell, and native copper artifacts. Worked conch shell spoons and pendants indicate southeastern contacts. Other hilltop ossuaries contained vast numbers of shell beads and no other artifacts. A different culture is suggested. Near Red Cloud, an historic village, abandoned by the Republican Pawnee about 1812, was investigated. In addition, practically all known Pawnee sites in the state have been visited and local collections studied. Pottery, bone, and stone artifacts were secured for comparison with the prehistoric material. In summary it may be said that the initial work of the Survey indicates strong southeastern influences in Nebraska, and almost nothing suggesting the Southwest.

Duncan Strong,
University of Nebraska

In October, 1930, preliminary excavations were started by the Cook Museum of Natural History on an old, consolidated freshwater mud deposit within one half mile of the museum, at Agate, Nebraska. Mammoth bone, bison, and smaller, as yet unidentified, fragments and locally extinct types of freshwater shells have been found in, and immediately above, an old peat bed. These deposits have long been known, but have never been studied. The accidental finding of flaked implements in a layer in this bed is resulting in excavations and studies of the beds, their contents and age. It is planned to continue this work when weather permits during the coming year.

Harold J. Cook,
Cook Museum of Natural History

Nevada. During the latter half of August, M. W. Stirling made a reconnaissance trip to northeastern Nevada. A number of promising sites were located, but excavations have been deferred to a future date.

M. W. Stirling,
Bureau of American Ethnology

The exploration of Gypsum cave near Las Vegas, Nevada, was begun by the Southwest Museum in January 1930, and continued until June, but was suspended during the hot summer months. It was resumed again November 1st, and will be carried on until the end of December and probably into next year. The cave was considered worthy of exploration on account of the finding of typical Basket Maker objects lying on the surface of extensive deposits in the inner chambers, giving rise to the hope that something older than the Basket Maker culture might be found. It must be remembered that the Basket Maker is the earliest well-defined ancient culture hitherto known in the southwest.

As the work went on, it was found that while most of the relics of man lay on or near the surface and could be recognized as the products of Basket Maker, Early Pueblo, and more recent Paiute peoples, every room of the cave yielded something pointing toward occupation by a people older than the Basket Maker, a people apparently associated with certain extinct Pleistocene animals such as the native American horse, two species of indigenous camels, and the ground sloth Nothrotherium. Numerous bones of the ground sloth were found, some of them extraordinarily well preserved and still showing some of the tissues attached. Besides these, there were large claws of the same animal with horny coverings still intact, masses of its tawny hair, and even a few pieces of its skin. Most of these were found in a layer of sloth dung which was very extensive and well preserved, due to the dryness of the cave.

Among the evidences pointing to the association of man with the extinct animals were pieces of a cane torch lying beside the bones of a baby sloth, under undisturbed strata and in an unburned area; a collection of sticks burned on one end, evidently the remains of a torch, under a solid undisturbed layer of unburned sloth dung; a stone dart-point between two layers of burned sloth dung and within a yard of a sloth bone on the same level; a piece of a wooden dart-shaft under a layer of sloth dung; two other dart-points at the bottom of a rock slide, in the top of which and almost directly above them lay a sloth skull; fragments of two painted dart-shafts at a considerable depth from the surface (about 10 feet) beneath a layer containing pieces of sloth dung and hair; and most important of all, the finding of a small bed of charcoal at a depth of about 8 feet from the surface beneath two layers of sloth manure. Directly above these, but near the surface, were typical objects left by Basket Maker, Pueblo, and Paiute peoples.

M. R. Harrington,
The Southwest Museum

New Mexico. Dr. F. H. H. Roberts, Jr. excavated a site 16 miles northeast of the Pueblo of Zuñi on the Zuñi reservation in western New Mexico. The work consisted of clearing the debris from two small stone structures of the Pueblo III period. One of the buildings was found to be a 64 room structure, while the other had but 20 rooms. In addition to the living rooms, seven average-sized kivas and one great kiva, 55 feet in diameter, were excavated. The three refuse mounds associated with

the dwellings were explored and 60 burials uncovered. The collection of objects from the site comprises a list of 400 specimens.

M. W. Stirling,
Bureau of American Ethnology

Mr. Stanley Stubbs paid a preliminary visit to the archaeological sites of the Governador region in Rio Arriba county for the survey inaugurated by the University of New Mexico and the School of American Research. No excavating was done, but the surface material in the caves and on the mesa ruins indicates occupation of the region by the Basket Makers, then by the builders of the small house ruins, and finally by the renegades after the Pueblo revolt. The large amount of foreign potsherds makes this an interesting region.

The third season of the field work conducted jointly by the School of American Research and the University of Kansas in the Sacramento district near Alamogordo yielded additional data on the cultures of the region. The two sites excavated consisted of large rectangular rooms with walls of adobe and stone arranged around a courtyard or plaza. The cultural material found shows a Mexican influence rather than one from the northern Rio Grande pueblos. The predominating pottery is a crude, reddish brown ware with a heavy black decoration, although there are many black-on-white sherds, and fragments of a number of trade wares.

E. L. Hewett,
University of New Mexico
New Mexico State Museum
School of American Research

Mrs. Ann Axtell Morris continued her study of pictographs in the Southwest, having devoted herself this season to four districts: Cañon del Muerto, where the work was initiated the preceding season, the La Plata River region, the Rio Grande, and the Zuñi reservation, including Inscription rock. A splendid series of paintings in color as well as drawings in black and white, and photographic reproductions form the nucleus of what it is hoped will eventually form a comprehensive collection of reproductions of pictographs.

Clark Wissler,
American Museum of Natural History

Assistant Professor Paul H. Nesbitt, of the Department of Anthropology in Beloit College, had charge of the excavations conducted by the Logan Museum in a pueblo ruin on the Mattocks ranch in the Mimbres valley. The object in view was to obtain material for museum display, for research purposes, and for publication, in an endeavor to throw more light on the Pueblo area. Sixty-two rooms were excavated, over 200 burials removed, and a representative collection of the Mimbres material culture obtained. The most important discoveries are as follows: 1. The architectural and ceramic remains indicate that, as time passed, the village underwent decided changes in house types and material culture. The first dwellings were

entirely subterranean pit-houses. During this occupancy, the dead were buried below the floors, stone work was rare, and pottery was distinguished by the large number of black-on-white bowls with realistic decorations. Later, the houses were semi-subterranean, with burials below the floor, stone work was plentiful, and the designs on the pottery were chiefly geometric, with the initial appearance of red-on-white ware. The final stage is represented by houses built entirely above ground. Burials were made outside the rooms. The ceramic remains show a sharp decline in black-on-white ware and a steady improvement in the red-on-white. 2. A kiva, with a ventilator shaft, fireplace, and a stone ledge running the full length of one wall, built during the second period, was found. 3. Among other important finds are a copper bell and two caches of stone hoes containing 25 and 47 specimens respectively.

George L. Collie,
Logan Museum

During the past summer, the Museum of the University of Pennsylvania sent a field party to the slopes of the Guadalupe mountains in Eddy county, New Mexico, and Culberson county, Texas, to investigate the caves so numerous in this region. Dozens of caves were visited in the hope of finding one which had been undisturbed. Three caves, all of which had been previously disturbed, were partially excavated by digging a trench along one wall, leaving the remainder for others. From one cave in Anderson canyon, on the east side of the mountains, we recovered a number of sandals, fragments of baskets and matting, bits of cord, and a few pieces of grayish black pottery. One type of sandal has a sort of fish-tail, formed by the crossing of the two warp elements at the heel, and extending about 2 inches beyond the rest of the sandal. It also has a covering over the toe, formed by shredding the leaves of some of the weft elements and tying them in a knot over the toe. In another cave on the south fork of "Three Forks" of Rocky Arroyo, two coiled baskets, of two-rod and bundle foundation, two sandals with pointed heel and toe, and two spear foreshafts were found. At the same levels, and in some cases above them, numerous animal bones were removed which have since been identified as those of *Equus complicatus*, *Bison alleni*, *Tetrameryx shuleri*, and a bird similar to a large stork. In the third cave on the southwestern side of the mountains near the Peaks, a sandal similar to the pointed heel and toe ones found on the east side, a fragment of twined woven bag, a foreshaft and other wooden objects, and the usual bits of cord and netting were encountered. Some of the potsherds found here were very similar to those from the cave in Anderson canyon. Where the culture of this region will fit into the general picture remains to be seen. Some of its traits strongly resemble Basket Maker, but others are different.

E. B. Howard,
Museum of the University of Pennsylvania

Mr. and Mrs. C. B. Cosgrove, under the direction of Dr. A. V. Kidder, made a reconnaissance in the region to the south and southwest of the Mimbres valley as

far as the international line in search of extensions of the Mimbres culture, and found evidence of an unexpectedly wide, though scattered, distribution of Mimbres material, the meaning of which will be reported on later.

Edward Reynolds,
Peabody Museum,
Cambridge, Massachusetts

Collaborative field work by the Carnegie Institution of Washington and the University of Colorado Museum was carried on from July 4 to October 22, 1930, at a site about four miles south of the Colorado boundary in the La Plata valley, New Mexico. The site overlooks the valley at a point where the latter closes in to form a narrow trough out through an escarpment of white sandstone. A few miles to the northward, the La Plata mountains abounded in game, the river valley provided much good corn land, and at the foot of the cliff, water rises to the stream bed no matter how dry the season. These conditions are sufficient to account for the fact that on the first terrace west of the river is to be found the largest cluster of ruins present in the entire length of the La Plata valley. The surface of the terrace is almost entirely artificial. In a distance of three-eighths of a mile from north to south, about forty house mounds are in evidence, while a blanket of refuse covers natural earth everywhere between them. For forty years, pot hunting has gone on among this cluster, but not to the extent of spoiling it for careful investigation.

The time and funds available in 1930 permitted the exploration of only a portion of the remains. Sixteen buildings were excavated wholly or in part, to a total of 170 rooms. In addition, 10 kivas were cleared, and considerable trenching done in refuse areas. A topographic map was prepared indicating not only surface configuration and the structures and deposits opened, but the other architectural remains and rubbish areas superficially in evidence. The data gathered reveal that the first inhabitants of the mesa to leave trace of their presence settled there during Basket Maker III. Pueblo I is scantily represented, but Pueblo II and Pueblo III, to and including the formal Mesa Verde phase, left great volumes of remains. Thus, the occupation of the site was nearly, if not altogether, continuous. The information which it has so far yielded upon architectural development, and the large collection of pottery and other artifacts recovered will go far toward completing an outline of the history of the material culture of the sedentary aborigines of the La Plata district from beginning to end. The 1930 field work was a continuation of that conducted for the University of Colorado Museum during most of the years since 1916. It was undertaken for the express purpose of securing certain details deemed necessary to the completion of an extensive report on the archaeology of the La Plata region. The objective would appear to have been attained, and the present expectation is that the report will be ready for the press before the end of 1931.

Earl H. Morris,
Carnegie Institution of Washington,
University of Colorado Museum

In the summer of 1930, the University of Minnesota continued excavating in the Galaz site of the Mimbres culture area, where twelve weeks had been spent the previous summer. At the northern end of the site, the excavation of the great communal pit room was completed. The inclined floor of the entrance did not start directly from the floor of the room, but from a step a foot above the floor level. Opposite the entrance was a shallow, circular firepit. Charred remains of sticks and reeds, probably originally forming the roof, were found abundantly over the floor. Near the fireplace was a collection of receptacles and pipes carved from tufa. Below the floor near the fireplace was a small earthenware pot filled with turquoise and shell beads, and near it a frog carved from stone and painted green with features of red and buff paint. Above the pit room were found two habitation levels, each with rubble walls and adobe floors. Along the river bank a single tier of surface rooms was found. Some had pit rooms, dug in the gravel, beneath them. In the southern part of the site, a room of the surface series was found whose wall bases were composed of a single tier of a double row of stone slabs set on end. Below this and in the adjacent area was a series of surface rooms of the rubble wall type, with two pit rooms beneath. A total of 114 skeletons, 142 vessels, and 98 artifacts were found.

The balance of the summer was devoted to excavating a small site on the Hudson ranch, on the banks of the San Francisco river in the Upper Gila area. The main building contained sixteen rooms. There was but the one habitation level. The masonry was of a high order, small flat rocks being used to level up the larger building stones, giving an appearance of coursing in places. Only one burial was found under the floor. All the large rooms had fireplaces outlined in stone. The poorly preserved burials were in a layer of black dirt and rubbish about two feet deep on the slope of the ridge below the house. Most of the burials were accompanied by only several bowls which were piled over the chest, or beside the flexed bodies. The pottery has a greater variety of shapes than has Mimbres ware, but is much inferior in design. The common bowl has a plain or corrugated exterior and a highly polished black interior. White-slipped ollas with a geometric design in black often had handles representing the heads or the entire bodies of animals. In all, 60 skeletons, 178 vessels, and 97 artifacts were found.

Albert E. Jenks,
University of Minnesota

New York. The Long Island Chapter, New York State Archaeological Association, in spite of drought that rendered surface collecting futile and heat that made excavating impossible during the summer months, has had a busy season. Latham has conducted fruitful excavations on Shelter island; Goddard continued on Wickham Creek, Cutchogue, and gave much of the heated period to restoring six fine Algonquin pots from various east end sites; Booth excavated a newly found pit area on the Old Field site at Southold with notable recoveries; and Latham, Booth, Lester, and Goddard continued excavation of the extensive site at Noyack. From the last, a distinct novelty was recovered in a flat slab of stone on which was a carefully and accurately etched figure of a spider web. Work on that site is to be con-

tinued until the end of the year. Reconnaissance has developed good prospects for the future.

Charles F. Goddard,
Long Island Chapter,
New York State Archaeological Association

Each year the Rochester Museum of Arts and Sciences conducts its field work in archaeology for some quite definite purpose; in 1930 an examination of the region was made in hope of finding a few spots that would furnish new clues. We found the region and the clues on the Susquehanna near Binghamton. Expecting to discover a vast area of Algonkian occupation, we encountered what appears to be a strangely mixed Iroquoian-Algonkian culture. Both pottery types are found on the same site and also the interlinking forms. In some ways this condition prevails at the Westfield, New York, site. Now we will have to start all over in our study of ceramics. Some interesting skeletons were discovered. We are gathering quite a collection of pathological bones.

During late September and early October, I found time to take a small party into Pennsylvania to cooperate with Donald Cadzow, who is working on the lower Susquehanna. Pennsylvania, through Cadzow, is discovering that it has an archaeological area of considerable importance.

Arthur C. Parker,
Rochester Museum of Arts and Sciences

North Dakota. The historical and archaeological survey which was begun last winter by the State Historical Society of North Dakota has been entirely successful and much favorable data concerning mounds, village and camp sites has been filed for future reference. Some new sites and mounds have been located which had not been known before. A few of these sites were visited in person by Mr. George F. Will and myself. All the Society can do now is to locate and, if possible, protect from destruction archaeological sites with the view of working them in the near future.

Russell Reid,
State Historical Society of North Dakota

An expedition from the Logan Museum to the Missouri Valley region of the Dakotas, led by A. W. Bowers, a graduate student of Anthropology in the University of Chicago, was financed by Dr. Frank G. Logan of Chicago, and the Trustees of Beloit College. An investigation was made of the remains of the earthlodge-building peoples, ranging from the Knife river, North Dakota, to the Sanger and Grand rivers, South Dakota. Marked differences were found in the style of pottery made by the Mandan and Hidatsa as compared with the Caddoan tribes, the Arikara and Skidis. The Mandan pottery is usually quite black; it commonly has the S curve, lacks handles, and shows excellent cord decoration of the rims. The early Arikara pottery is generally brown in color, has bone or stick imprinted deco-

ration, and often possesses handles or lugs. It is only in the more modern village sites that we find cord decorations. In early times, the Arikara practiced mound burials, but later the individual grave replaced the burial mound. The earthlodges are essentially the same throughout the area studied; such changes as were made consisted merely in an increase of size to accommodate the horse, after it was introduced. Villages were always located near suitable corn grounds. Fortifications were introduced early, and there was a marked tendency to strengthen the defense after 1725, due to the presence of the powerful Dakota.

George L. Collie,
Logan Museum

Ohio. The field work of the Ohio Archaeological and Historical Society during 1930 may be divided into three sections. (1) During April and May, two Iroquois village sites were excavated south of Cleveland on the Cuyahoga river. About 60 large refuse pits yielded quantities of animal bones and a large number of artifacts. About 23 burials were found, several of which were accompanied by whole pots of the scantily decorated variety found on Iroquois sites in northern Ohio. Both of these villages were hilltop fortifications, and both prehistoric, notwithstanding the discovery of two pioneer burials in one of them. Two other fortified sites were examined in the vicinity of Akron, with meager results. (2) In June and July, excavations were continued near Huron, Erie county, on two Hopewell mounds and an Iroquois village site. As the first examples of Hopewell in northern Ohio, the mounds were very interesting. Among the notable finds were a large effigy alligator pipe of Ohio pipestone, two entire pots, a score or more of banded slate gorgets, silver-covered copper ear spools and other ornaments, and a few platform pipes. The two mounds contained in the neighborhood of twenty burials each. The Iroquois village site, a mile up the Huron river, yielded some twenty skeletons and a comparatively small but distinctive collection of artifacts. (3) During August and part of September, a large mound of the Adena type near Athens, in the southeastern part of the state, was excavated. In this mound, originally about thirty feet high, a single burial was found, in a pretentious sub-floor rectangular tomb about six feet in depth.

E. F. Greenman,
Ohio Archaeological and Historical Society

Pennsylvania. Near Safe harbor, Pennsylvania, a group of archaeologists, under the direction of Donald A. Cadzow of the State Historical Commission, is attempting to preserve for the future the prehistoric rock writings found along the lower Susquehanna river. Accurate charts, scale models and moulds are being made of the pictographs in place. Early in 1931 an effort will be made to remove some of the rocks to the State Museum, for in 1932 the backwater from a new hydro-electric dam will cover the area to a depth of about forty feet. From the comparative study made of the pictographs, it is evident that there are three groups of them. The earliest highly conventionalized figures are found on Walnut island about three

miles above Safe harbor. Another group, about six miles above Safe harbor, have some of the characteristics of the Walnut island group with easily deciphered human figures only slightly conventionalized. The third group, about one-half mile below Safe harbor, are of apparent Algonkian origin. In the latter group the thunder bird, deer, elk, buffalo, and snakes are clearly depicted.

The discovery of Algonkian evidence on the islands led to a search for their remains on the mainland. About one-half mile from the rocks upon which the Algonkian picture writing was found, a burial site with six human skeletons was uncovered. With these burials were found one complete pottery vessel and several clay pipes and other objects typical of the culture. An effort to locate sites contemporary with the writings on Walnut island and farther up the river led to the discovery of Susquehannock Indian village and burial sites. To date, a total of 120 burials have been uncovered, together with approximately 250 complete plain and effigy pottery vessels, carved and etched effigy pipes, innumerable bone awls and punches, a complete series of effigy combs made of antler and bone, fishhooks, and one complete wooden spoon preserved in a brass kettle. Some of the sites indicated trader contact, others were prehistoric. Altogether enough native Susquehannock material has been found to interpret accurately the material culture of these people when they were at the zenith of their power on the Susquehanna river. Evidence of another culture as yet unidentified has been found at Washington borough not far from the upper group of pictographs. Three skeletons in this group are being compared with the known Algonkian remains. The artifacts found with this culture differ from both the known Algonkian and the Susquehannock material from the region. Their pottery is made from a red clay and, instead of the shell filler of the Susquehannock and the pebble filler of the local Algonkians, it has a pounded quartz filler. In type it differs from both of the above mentioned cultures, and is decorated with incised designs from base to rim. A girdle of three hundred and ten graduated bone beads, and a comb of a new type for the region was found with this group.

The well-established graphic art of the Susquehannocks, as depicted upon their pottery and other objects, eliminates them from the possibility of having carved the highly conventionalized figures upon the rocks. The Algonkian group has what appears to be a contemporary land site near-by. Perhaps the unidentified culture may prove to be that of the people who pecked their first efforts at graphic art on the rocks in the river.

In addition to the work near Safe harbor, Robert M. Engberg and George Fisher, working from June 1 to September 15, continued the Fayette-Westmoreland counties investigations begun in 1929. The territory included the area between the Youghiogheny and the Monongahela rivers, which had not been investigated in 1929. A private undertaking has been that of the Messrs. Allyn and Richard Wright of Warren, who have completed a township by township survey of almost three-quarters of Erie county, and so far have located 19 camp sites, 10 villages, 6 earth rings or enclosures, and 7 mounds. The mounds are small, 25 to 30 feet in diameter, and three or four feet high. Directly connected with the archaeological field work is the organization of the Society for Pennsylvania Archeology, the first annual meet-

ing of which was held at the University Museum in Philadelphia, in January, 1930.

Frances Dorrance,
Society for Pennsylvania Archeology

Tennessee. During 1930, the East Tennessee Archaeological Society continued its survey and study of aboriginal remains in Hamilton county. In addition to this, over a period from May to December, a group of three conical mounds on the R. N. McKenzie farm, Tennessee river, was completely explored. They averaged six feet in altitude and thirty-five feet in diameter. Smithsonian aid was granted for this work. The museum at Chattanooga, where the artifacts and remains will be displayed, also cooperated with the Society. All burials have been those of adults. Artifacts were few and there was a total absence of pottery, except sherds brought in during the mound construction. The mound had been raised over a building which had been partially burned. An exceedingly large nut stone was found on the river's edge opposite a village site. It was estimated to weigh 300 pounds and has over 50 nut holes. The Society also worked on the Evans farm in Sequatchie county. Eight burials have been removed. No pottery has been encountered so far, but bones, shells and artifacts have been recovered. No evidence of European contact has been discovered in either of the above mentioned sites. The construction of dams for power and navigation purposes will cause total destruction to many sites. It is essential to secure definite data and enlist the interest of the public in order to secure means, and thoroughly examine such sites as fast as possible. Sites for 17 dams have been authorized by the Government and construction on some has started.

Charles K. Peacock,
East Tennessee Archaeological Society

Texas. During the latter half of July, M. W. Stirling made a reconnaissance trip to the Big Bend region in Texas. A number of caves were examined, but no excavations were undertaken at this time.

M. W. Stirling,
Bureau of American Ethnology

In the central portions of the state, I have done further research in the "burnt rock middens," and have confirmed my establishment of three culture levels, which I refer to as the Lower, Middle, and Upper cultures. Occasionally middens are found containing elements of one level only, sometimes of two, and sometimes of all three levels. These levels will almost surely tie with the New Mexico-Arizona culture stages when careful comparisons are made. During the summer I explored numerous rock shelters along the Cowhouse, Bosque, and Leon rivers and their tributaries, all of which had been occupied by man, and most of which had been utilized for burial.

In the latter part of the summer, an expedition was sent to the coast near Corpus Christi and Rockport. The whole coast region gives abundant evidence of a cul-

ture based on a sea food economy combined with some hunting. One strip of the coast below Brownsville is possessed of evidence of an almost pure sea shell culture, arrowpoints, spearpoints, axes, and scrapers all being made of shell. Bones of dogs of a given type are found from central east Texas to Brownsville; i.e., the small, sharpnosed variety described by Gatschet as voiceless, and mentioned by the Spaniards as existing both in east Texas and in Yucatan. Pottery is found along the whole coast line and at places in large quantities. Patterns, materials, and forms of decoration vary decidedly from one part of the coast to another, but everywhere there is evidence of high grade wares.

Two expeditions went to the Red river and east Texas about the middle of the summer. This is the region of a sedentary village culture in historic times, and here are found abundant evidences of a high culture of the Mound Builder type. The region is very complicated archaeologically.

I have not worked in the far west (Trans Pecos), on the high plains, or in the Panhandle during the past year, but at a meeting of the Archaeological Society at Abilene recently, I heard papers from and had interviews with workers in those parts. Mr. Floyd Studer of Amarillo reports numerous village sites with houses of stone foundation along the Canadian; also much pottery and many mullers, indicative of horticulture. Some of this seems to tie up with New Mexico, but it is my opinion that the pottery indicates a movement up the streams westward from the Mississippi valley. Certainly the sparse pottery remains of central Texas represent a westward movement from the coast and east Texas. Around Abilene, Dr. Ray and Mr. E. B. Sayles have made numerous highly significant finds. Dr. Ray took me to a place on Elm creek near Abilene where fireplaces with flint artifacts and slivers are being washed out of a bank at a depth twenty-four feet below the surface. These artifacts are identical in type with those of the Lower Culture in the central Texas middens. Evidently, therefore, this culture level dates back many centuries, but the clays and sands of the Abilene district are subject to much shifting by the prevailing high winds in the frequent droughts. The Malakoff sandstone image found in high gravel terraces of the Trinity some twenty miles east of Corsicana is certainly also very old, but cannot be placed definitely because of the possibility of those gravels having been disturbed by a near-by creek. The geological age of both the Elm Creek bank and of the Malakoff terrace is yet to be determined. Dr. E. H. Sellards, of the University of Texas, thinks that both involve serious difficulties.

J. E. Pearce,
University of Texas

During 1930, the many members of the Texas Archaeological and Paleontological Society have continued to record the locations of and secure collections from village sites, shell middens, rock shelters, cave deposits, and burial places in widely separated parts of the state. The more noteworthy results are: Mr. Conkling, of El Paso, reports finding bones of extinct Pleistocene mammals in association with human bones deep in a cave; Mr. Studer, of Amarillo, reports the location of several

additional sites in the Panhandle; Mr. Sayles, of Abilene, has found a new local form of burial in which graves occur in hard caliche soil below a large pile of rocks; Dr. Ray has found burnt rock and charcoal strata at depths of 15, 24, and 27 feet below the surface. Four flint artifacts of distinctive form have been found *in situ* 24½ feet below the surface. Elsewhere, five burials have been excavated by him, two of them in stone-lined graves, a type not previously found in this section.

Cyrus N. Ray,
Texas Archaeological and Paleontological Society

Owing to the fact that the entire collection of the West Texas Historical and Scientific Society was moved into more adequate quarters during the year, less field work than usual has been possible during 1930. Five new sites (three open camps and two small rock shelters—one with pictographs) showing evidence of former Indian occupation were discovered. These, together with former locations, bring the total record up to 162. Approximately 60 museum specimens were added to the collection as a result of the year's work at old and new sites.

Victor J. Smith,
West Texas Historical and Scientific Society

Utah. The Department of Anthropology, University of Utah, worked in three localities this year. The first was a large cave on the north shore of Salt lake which contained a hybrid early Pueblo-Plains culture. Below this in the cave deposits was evidence of human occupation down to the sands of Lake Bonneville, placing man in Utah back 7,000 to 8,000 years. The San Juan region was visited to verify work done by the University of Utah in previous years, with special reference to certain pots of a Chaco type which came from the Mesa Verde area. This trip involved some exploration and a little digging. Finally, the remainder of the season was spent in the Sevier desert region of western Utah. Here we found adobe-walled houses of Pueblo II type, clay figurines probably like those of the Freemont culture, and kivas with a surprising resemblance to those of the San Juan.

J. H. Steward,
University of Utah

The archaeological survey of the Southwest, begun by Messrs. Wm. H. Claflin and Raymond Emerson in 1927, has been pursued each year since that date, and, during the summer of 1930, reconnaissance and excavation were carried on in the area along the Colorado river, north of that which has been previously covered. This is, roughly, the country centering around the Colorado river with the Green. The results of this expedition, which was under the charge of Mr. Henry B. Roberts, belong in next year's report.

Edward Reynolds,
Peabody Museum,
Cambridge, Massachusetts

During the months of July and August, Dr. Charles Van Bergen led the Van Bergen-Los Angeles Museum field party into San Juan county, Utah, near Navajo mountain, where work was done in four different sites. Two caves were thoroughly explored and a number of Basket Maker specimens were recovered, as well as evidences of some intrusive Pueblo culture. Especially worthy of note are six fine atlatl foreshafts in pristine condition, two medicine bundles, and fine examples of basketry and woven sandals. Each cave contained a number of empty rock cists. A portion of an extensive Pueblo ruin standing on a mesa, known locally as Lost Mesa, near the northeast slope of Navajo mountain was excavated. The entire mesa top was mapped by the expedition. One kiva and two or three rooms were completely excavated. The expedition also worked in a small cavate dwelling and granary about one mile northwest of the mesa. We named it Little Granary House. Architecturally it was a gem. There were five perfect granary rooms and the remains of two dwellings, from one of which we obtained a perfect reconstruction of a roof. Sections of a beam from this ruin, when compared and studied by Mr. John McGregor, of the University of Tucson, tied in with charred beams taken from the kiva on the mesa.

Arthur Woodward,
Los Angeles Museum

West Virginia. During July, a field party of the Museum of the University of Pennsylvania, under the direction of Mr. Charles Bache and including the writer, partially excavated a conical mound on the east bank of the Ohio river at Beech Bottom, West Virginia, fourteen miles north of Wheeling. It measured 22 meters in diameter at the base and 4 meters in height. Indications are that the entire mound was erected in connection with one sub-surface burial, 2 meters west of center. The grave was bark-lined with no sign of a log sepulcher. The skeleton was decorated with hundreds of copper and shell beads, all the shell being of Gulf coast species. The mound was constructed of yellow surface soil and of dark loam, the latter brought from some distance or from the river bank 25 feet below. The dark earth was used to fill the grave and was spread over the surrounding surface. All objects, except a few minor ones believed to have been accidentally introduced, were in association with the dark soil. Deposits of objects included stemmed and leaf-shaped blades, celts, red and yellow ocher, and nine complete and thirteen fragmentary clay-stone tubes, essentially identical with the tubular pipes assigned by Shetrone to the Adena culture. A number showed evidence of combustion on the inside; one contained a burnt clay, another a burnt wooden, pellet. There were also some other evidences suggesting Adena affiliations. The positions of the broken tubes and a few broken blades were such as to indicate their intentional breakage.

Linton Satterthwaite, Jr.,
Museum of the University of Pennsylvania

Wisconsin. Indian history surveys have been undertaken by the State Historical Museum in several important lake regions in Wisconsin. Two important archaeo-

logical collections, both made in the Rock River valley, have been added to the extensive collections in the museum. The Indian trails of the state have been mapped and are being further perfected as opportunities offer. With the cooperation of the clubs of the Wisconsin Federation of Women's Clubs, metal and other markers have been placed on several trails. The exploration of a number of mounds and burial places has been supervised. During both the regular session and the summer session of the University, pilgrimages to village sites, mound groups, flint workshop sites, and other archaeological features were conducted by the State Museum.

C. E. Brown,
State Historical Museum of Wisconsin

The assistance rendered to the State Survey by the members of the Wisconsin Archeological Society by sending in information describing unrecorded and other archaeological features has been excellent. Present records show 11,600 earthworks and over 600 camp and village sites in Wisconsin. Mound explorations were conducted in Octonto, Waupaca, Rock, and Dane counties. A number of additional prehistoric effigy mounds have been permanently preserved. Markers have been placed on many mounds, village sites, and trails. Several state and University departments have cooperated with the Society in its exploration and other work.

C. E. Brown,
Wisconsin Archeological Society

An archaeological expedition of the Milwaukee Public Museum, led by W. C. McKern, spent two months in excavating mounds in the Schwert group, Trempealeau county, Wisconsin. Ten small mounds, from two to seven feet in height, and from thirty to eighty feet in diameter, and two campsites were examined. A uniform culture of Hopewellian type was represented by the data taken from these sites. All the mounds examined were burial tumuli. The burials were invariably compound, containing the remains of from two to forty-five individuals, and were centrally placed either in rectilinear, bark-lined, sub-floor pits or on rectilinear floor areas previously cleaned of all humus-discolored soil. The bodies of the deceased had either been interred extended in the flesh or were represented by reburials of bundled, disarticulated bones. Although all skeletal parts were in a very advanced state of decomposition, a few crania were sufficiently intact to show a pronounced artificial flattening of the occiput. Numerous artifacts found associated with the burials included: large chipped-stone knives and projectile points, from 5 to 11 inches in length, fashioned of quartzite, chert, jasper, chalcedony, and obsidian; flat copper celts; independent halves of copper ear spools with centrally placed pearl beads; hemispherical wooden buttons covered with sheet silver and perforated for purposes of attachment; tubular beads rolled from thin sheet copper, arranged in parallel sequence to form necklaces; conical pendants rolled from sheet copper; conjoined tubes of copper enveloping reeds; a long copper awl; pottery characterized by rouletted intaglios decorating the outer surface. The data obtained from

this work greatly increase our knowledge of the Wisconsin variant of the basic Hopewell culture.

W. C. McKern,
Milwaukee Public Museum

The Neville Public Museum, at Green Bay, has conducted surface surveys of various localities in its own and surrounding counties. Its superintendent has excavated mounds and burial places in several surrounding counties with interesting results. Plans for the organization of a local archaeological society, and of a systematic survey of Brown and surrounding counties, are under consideration.

T. T. Brown,
Neville Public Museum

During the summer, Mr. Louis Schellbach, of the Museum of the American Indian, Heye Foundation, excavated a bird-shaped effigy mound near Gresham, Wisconsin. No noteworthy results were obtained.

G. G. Heye,
Museum of the American Indian,
Heye Foundation

Alabama Anthropological Society	Alabama
Alabama Museum of Natural History	See p. 294
American Museum of Natural History	Arizona, Colorado, New Mexico
Arizona State Museum	Arizona
Bureau of American Ethnology	Florida, Nevada, New Mexico, Texas
Carnegie Institution of Washington	New Mexico
Colorado Museum of Natural History	See p. 301
Cook Museum of Natural History	Nebraska
East Tennessee Archaeological Society	Tennessee
Field Museum of Natural History	Colorado
Indiana Historical Bureau	Indiana
Laboratory of Anthropology, Santa Fe	Illinois
Logan Museum, Beloit College	New Mexico, North Dakota
Los Angeles Museum	Arizona, Utah
Medallion, Gila Pueblo	Arizona
Milwaukee Public Museum	Wisconsin
Mississippi Department of Archives and History	Mississippi
Museum of the American Indian, Heye Foundation	Canada, Wisconsin
Museum of New Mexico	New Mexico
Museum of the University of Pennsylvania	Alaska, New Mexico, West Virginia
National Geographic Society	Arizona
National Museum of Canada	See p. 298

Neville Public Museum	Wisconsin
New York State Archeological Association	New York
Northern Arizona Society of Science and Art	Arizona
Ohio State Archaeological and Historical Society	Ohio
Peabody Museum, Cambridge	New Mexico, Utah
Phillips Academy, Andover	See p. 299
Rochester Museum of Arts and Sciences	New York
San Diego Museum	California
School of American Research, A.I.A.	New Mexico
Society for Pennsylvania Archaeology	Pennsylvania
Southwest Museum	California, Nevada
State Historical Museum of Wisconsin	Wisconsin
State Historical Society of Iowa	Iowa
State Historical Society of North Dakota	North Dakota
Texas Archaeological and Paleontological Society	Texas
U. S. National Museum	West Indies, Alaska; Arizona, and see p. 301
University of Arizona	Arizona
University of Arkansas	Arkansas
University of Chicago	Illinois
University of Colorado	Colorado
University of Denver	See p. 301
University of Illinois	Illinois
University of Kansas	New Mexico
University of Kentucky	See p. 303
University of Michigan	Michigan
University of Minnesota	New Mexico
University of Nebraska	Nebraska
University of New Mexico	New Mexico
University of Texas	Texas
University of Utah	Utah
E. K. Warren Foundation, Three Oaks, Michigan	Canada, Michigan
West Texas Historical and Scientific Society	Texas
Wisconsin Archeological Society	Wisconsin

CARL E. GUTHE, *Chairman*

ANTHROPOLOGICAL NOTES AND NEWS

American University of Beirut

There is no Department of Anthropology in the American University of Beirut, but a committee has been formed for fostering anthropological and ethnological interests by a series of popular lectures and publications. In a statement circulated by this committee the hope is expressed that in time some students will become interested in the problems of their own races and cultures in the Far East.

The following lectures were given in 1929–1930 and popularized through publication in Arabic in "Al-Kulliyyeh."

What is Anthropology, by William T. Van Dyck.

On the Brain and on Some Mental Activities of Prehistoric Races, by C. U. Ariëns Kappers.

Racial Pathology, by Harold Krischner.

The following lectures have been arranged for 1931–1932:

Gesture Language in Syria, by Anis Freyha.

Basal Metabolism and other Physiological Measurements of Racial Groups in Syria, by Edward L. Turner.

Remains of Prehistoric Man in Syria, by Harry Gaylord Dorman.

Bishop Museum

The Bishop Museum Expedition to the Tuamotus has completed its fieldwork, and its members, Kenneth P. Emory, J. Frank Stimson, and Harry Shapiro, are working on material for publication. A matter of great interest is the recovery of a series of chants addressed to Kiho, the little-known principal god of the Polynesian pantheon. Prior to this discovery the only extensive documentary evidence relating to Kiho came from New Zealand and is, on the whole, less satisfactory than the chants now recorded. Plans were made of a great number of marae, and the knowledge so gained, combined with knowledge drawn from other sources, will make possible a reconstruction of the history of the various types of structure included in the term marae. Interesting data on the distribution of physical types was also secured.

H. D. Skinner has been doing local fieldwork in Tahiti, under the auspices of the Bishop Museum, as part of a research on the ground stone cutting implements of Polynesia.

Dr. Peter H. Buck (Te Rangi Hiroa), whose work on Samoan Material Culture (B. P. Bishop Museum Bulletin 75) was published last year, is at present preparing manuscript on the ethnology of the Cook Islands, in which he spent fifteen months during 1929–30.

Dr. E. S. Craighill Handy is working on an analysis and definition of the ancient Hawaiian culture.

Willowdean C. Handy has prepared a manuscript on "Marquesan Art."

Alfred E. Hudson is working on the archaeology of a portion of the island of Hawaii.

J. Gilbert McAllister has completed an archaeological survey of Oahu.

John E. Reinecke made a survey of the archaeological sites in Kona, Hawaii.

Laura M. Thompson is making a detailed investigation of Melanesian pottery and Guam artifacts.

Robert P. Lewis has been making a systematic search for Hawaiian featherwork throughout the world.

Bruce Cartwright is working on the history and traditions of Kauai and Oahu.

Paul T. Diefenderfer is recording details of Samoan life.

Dr. Panchanan Mitra has returned to the University of Calcutta, after making comparative studies in American and European museums of the Hindu-Polynesian culture traits.

Thomas G. Thrum continues his translating of Hawaiian literature.

Fellowships have been granted for 1931–32 to Gordon MacGregor, who will make an expedition to the Gilbert and Ellice Islands, and to Edwin G. Burrows, who will study Polynesian music.

Laboratory of Anthropology (Santa Fe)

An expedition led by Dr. Albert B. Reagan in 1930, and under the direction of the Laboratory of Anthropology, examined thirty-seven anciently inhabited caves in the Uintah basin in northeastern Utah, obtaining mummies, tools, and implements of both Pueblo and Basket Maker cultures. It also examined eleven earth-lodge Pueblo villages of the Willard (Utah) stage of Pueblo culture. Squarish stone houses, built of undressed river cobbles, were also found in the Brush Creek section; and forts, cliff houses, and towers in Nine Mile canyon, east of Price, Utah. Two hundred and thirty-four groups of pictographs were also photographed, which show four somewhat successive stages of ancient culture, Basket Maker, Puebloan, a people who made circular-bodied drawings of human beings, probably patterning their drawings after the round faces of the sun and moon, and a "head-hunting" people who made square-shouldered drawings of human beings. The glyphs show that the last two had some customs that were like those of the southern California Shoshoneans. They also seem to show that the Basket Makers were also of the Ute-Chemehuevi division of the Shoshonean family. The "Head Hunters," who finally expelled the Pueblo from the region depict themselves time upon time as returning from battle with captive Pueblo women and children and the heads of the Pueblo braves who dared defend their homes.

The work of this expedition is to be continued during 1931.

Logan Museum

Dr. George L. Collie, who has been Director of the Logan Museum since its inception in 1893, will resign from this position in June. At the same time he will

resign from the Professorship of Anthropology in Beloit College. Mr. Paul H. Nesbitt, Associate Professor of Anthropology in Beloit, will succeed him.

The investigations carried on by the Logan Museum in the Mimbres field for the past two summers will be continued through the coming summer at the Mattock's ruin, Mimbres, New Mexico. The work will be in charge of Mr. Paul H. Nesbitt. Five Beloit College students, taking work in the Department of Anthropology, will accompany the expedition.

The work of the Logan Museum for the past two seasons in Mandan territory will also be prosecuted this summer under the guidance of Mr. A. W. Bowers, a graduate student of anthropology in the University of Chicago. Four Beloit College students of anthropology will join the expedition. The investigations will be carried on in Arikara territory in order, if possible, to determine the relations between the Mandan and the Arikara during the earlier periods of their joint relationships.

Mr. A. W. Pond, for many years a research assistant in the Logan Museum, will resign from his position July 1st. His work has been carried on chiefly in Palaeolithic sites in France, the Sahara desert, and in northern Algeria; he was also with the expedition of the American Museum of Natural History in the Gobi desert for one season. Mr. Pond has not announced his plans for the future.

Los Angeles Museum

Through the continued interest of Mr. Roscoe P. Conkling of El Paso, Texas, the Los Angeles Museum was advised of a second cave occurrence in the Organ mountains of New Mexico. This site, now known as Shelter cave, occurs on the west flank of the range, in a straight line approximately 2 miles west and south of Conkling cavern. Excavations in the cave were conducted by a Los Angeles Museum field party and completed during the summer of 1930. Remains of extinct mammals were encountered in the deposits and represent among other forms the peculiar antelope *Tetrameryx*, ground sloth (*Nothrotherium*), camel, and horse. The presence of a Basket Maker culture made it particularly desirable to study the field relationships of the human and extinct mammal records.

The collection secured from Shelter cave is now at the Museum and portions of it are being studied by Chester Stock and by Hildegarde Howard.

Social Science Research Council 1930–1931

Research Fellowships in the Social Sciences

The seventh annual awards of Research Fellowships were announced in February, 1931. Twenty-four new Fellows were appointed for 1931–32, and two extensions of 1930–31 fellowships were made. The total amount involved in these awards approximated $75,000. Since the inception of the fellowship program in 1925, a total of 139 persons have been awarded Research Fellowships, with stipends aggregating over $435,000.

As in previous years, the major objective of these fellowships continues to be the development of more adequately trained research investigators rather than the

immediate execution of specific pieces of research. The holders of fellowships ordinarily have a year (in exceptional instances a somewhat longer period) entirely free from teaching and other duties, in which to secure further field training or clinical experience, to become acquainted with new points of view, schools of thought, or experimental work, and in many instances to apply the techniques and procedures of related disciplines of their own special fields of activity. As initially approved by the Fellowship Committee, the Fellows are allowed to carry out their programs of study wherever it seems most desirable—in this country or abroad.

The basic stipend attached to these fellowships for a period of twelve months is $1,800 for a single, and $2,500 for a married, Fellow, with adjustments upward in case there are dependents. Supplementary allowances are granted to cover travel and incidental expenses as needed.

The Research Fellowships are open to both men and women of American or Canadian nationality provided (1) they are not over thirty-five years of age, and (2) they are the holders of the Ph.D. degree or its equivalent in terms of other types of training and experience. In rare instances, the formal requirements stated above may be waived.

The closing date for making application for 1932–33 is December 1, 1931, the awards to be announced not later than March 1, 1932. Further information and application blanks may be had by addressing the Fellowship Secretary, Social Science Research Council, 230 Park Avenue, New York City.

The following were among those appointed to Research Fellowships for the year 1931–32:

Herbert Blumer (Ph.D. Chicago). Instructor in Sociology, University of Chicago. Subject of study: "The History of Fashion in France as an Index to the Changes in Social Customs." Study in France.

Winthrop Niles Kellogg (Ph.D. Columbia). Associate Professor of Psychology, Indiana University. Subject of study: "The Influence of Human Environmental Factors upon the Behavior of the Anthropoid Ape." Study in the United States.

Harold Dean Carter (Ph.D. Minnesota). Subject of study: "The Heredity of Mental Traits based upon a Study of Twins." Study at Stanford University.

Grants-in-aid

During 1930–31 the Social Science Research Council awarded 33 grants-in-aid from 85 applications. The total amount involved in these grants is approximately $23,000. Since the inception of its grants-in-aid program in 1927, the Council has allocated over $90,000 to 127 individual research projects ranging over the fields of economics, history, political science, sociology, social psychology, anthropology, law, statistics, and education.

The grants-in-aid are open to mature scholars without reference to age, whose ability to do productive research has been clearly demonstrated. The project for which aid is sought must be well under way and promise significant results. Ordinarily the maximum grant does not exceed $1,000. Wherever possible, institutions

to which applicants are attached are expected to contribute financially or with other special support. Grants may be used to defray such items as the investigator's living expenses while in the field, the costs of travel, clerical or statistical assistance, photo-stating, printing and stationery; but ordinarily not for the purchase of books or manuscript materials. A small portion of the Committee's budget for grants may be allocated to aid in the publication of significant manuscripts not of commercial value.

Further information and application forms may be had by addressing the Secretary of the Committee on Grants-in-Aid at the Council's New York City office, 230 Park Avenue.

The recipients of grants during 1930–31 included:

Alfred Irving Hallowell (University of Pennsylvania) to aid in the completion of a study of the Interrelationship between the Kinship Terms and the Social Organization of Cree-speaking Bands in the Environs of Lake Winnipeg.

Bernhard J. Stern (Encyclopedia of the Social Sciences) to aid in the completion of a study of the Contribution of Lester F. Ward to Sociology.

Fellowships for Southern Graduate Students

The second annual awards of fellowships to Southern graduate students in the social sciences were made on March 30, 1931.

The new appointments for 1931–32 included:

William Allison Davis (A.B. Williams College; M.A. Harvard University). Instructor, Hampton Institute. Field of study: Anthropology.

Mark Hanna Watkins (B.S. Prairie College, University of Chicago). Field of study: Anthropology.

Tulane University

(Department of Middle American Research)

The Department of Middle American Research of Tulane University has received a grant from the Rockefeller Foundation of $15,000.00 a year for three years. These funds will be used for the complete cataloguing of the library and for publications. The following publications will be issued shortly, under the heading of Tulane University, Middle American Research Series: (1) Ethno-Botany of the Maya, by Ralph L. Roys. (2) The Yearberers People, a Study of the Guatemalan Indians of Jacaltenango, by Oliver La Farge and Douglas Byers. (3) A volume containing a series of papers written by members of our staff.

Mr. Juan Martinez, of Merida, Yucatan, has published a Maya-Spanish section of the Motul Dictionary. This Dictionary is of the greatest importance to all students of Maya language, ethnology, and archaeology, who should be very grateful to Mr. Martinez for his excellent work. The Dictionary is introduced by a reprint of Juan Coronel's Grammar of the Maya Language. The volume contains a total of 934 pages and can be ordered from Mr. Juan Martinez, Calle 25, No. 500, Merida, Yucatan, Mexico. The price is $8.00.

YALE UNIVERSITY

(Department of the Social Sciences)

The Department of Economics, Sociology, and Government has been expanded, in the graduate field, to include two new divisions, Anthropology and Human Geography, and has changed its name to the Department of the Social Sciences. This development is a natural outgrowth of the work of the division of Sociology at Yale, which has always stressed the anthropological approach and the geographic influences on human society, and which will continue to offer the courses in anthropology in the undergraduate schools. The two new sub-departments will permit more graduate specialization in their particular fields. A special effort, however, will be made to correlate all the work in the social sciences, as, for example, by means of an interchange of faculty and students. Directors of Graduate Studies have been appointed for the various divisions as follows. For the old divisions, Professor Clive Day will continue to direct the work in Economics, Professor A. G. Keller the work in Sociology, and Professor Francis W. Coker that in Government. For the new divisions the following appointments have been made. Dr. Edward Sapir, of the University of Chicago, who has accepted a call to be Sterling Professor of Anthropology and Linguistics, will be Director of Graduate Studies in Anthropology, and Professor Ralph H. Gabriel, of the Yale history department, will direct the work in Human Geography.

The new division of Anthropology will include several faculty members already on the ground, namely, Dr. Clark Wissler, Professor of Anthropology, Dr. George Grant MacCurdy, Research Associate in Prehistoric Archaeology and Curator of the Anthropological Collection, and Dr. Cornelius B. Osgood, Instructor in Anthropology. These men, with Professor Sapir, will carry the bulk of the work in anthropology. The staff will also be increased next year by the appointment of Mr. John Dollard, now of the University of Chicago, as Assistant Professor of Anthropology, and Dr. Richard Thurnwald, Professor Extraordinary in the University of Berlin, who as Visiting Professor of the Bishop Museum will give seminars at Yale next year. Dr. Charles T. Loram, former Chairman of Native Affairs and Director of Education in Natal, South Africa, who has been appointed Professor of Comparative Education, will devote some of his time to work in anthropology, especially the education of primitive peoples. Graduate courses in the Anthropology group will also be given by Professor Keller, Leyburn, and Murdock from Sociology and Professor Huntington from Human Geography.

The work offered by the division of Anthropology will include courses and opportunities for research in ethnology, cultural theory, primitive linguistics, and, to some extent, archaeology and physical anthropology. Graduate students will be expected to have a general acquaintance with the social science field and with psychological and sociological points of view. The emphasis throughout will be on culture and its historical and psychological interpretation. Opportunity will be given for field work, which in general will form part of the requirement for the doctor's degree.

The new program in Human Geography will require candidates for the degree

of Doctor of Philosophy (the Master of Arts degree will not be conferred in this subject) to divide their work among three groups of courses as follows: (1) Courses dealing with the natural environment. The faculty for this group will be drawn from the University departments of Geology, Botany, Zoology, and Forestry. (2) Courses dealing with human society. These are selected from the divisions of Sociology, both theoretical and applied, Anthropology, Economics, and Government. (3) Courses dealing with the adjustments of human society to the natural environment. This field will be covered by Professor Gabriel, Dr. Ellsworth Huntington, Research Associate in Geography, and by a professor of geography whose appointment has not yet been announced.

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DR. WENDELL C. BENNETT, of Chicago University, has been appointed Assistant Curator of Anthropology in the American Museum of Natural History. His appointment will become effective September 1, 1931.

MR. H. J. BOEKELMAN has equipped a small vessel for shell heap exploration in and about the West Indies under the auspices of the Department of Anthropology in the American Museum of Natural History. Mr. Boekelman's scientific assistants are Junius Bird and Howard M. Mossman. Mr. Boekelman has made an intensive study of shell heap literature and has outlined a program covering a period of years for the excavation and study of shell heap problems relative to the shores of South America and the West Indies.

MR. RICHARD M. SNODGRASSE, a graduate student in the University of Chicago, will continue his archaeological investigations for the American Museum of Natural History this summer. He will give special attention to the Western Plains area in Colorado and Texas.

MR. SCUDDER MEKEEL, Research Assistant in Anthropology at the Institute of Human Relations, Yale University, will spend the summer months in ethnological field work among the Dakota Indians. Most of his time will be spent on the Pine Ridge reservation.

MR. CHARLES AMSDEN of the Southwest Museum is engaged in the preparation of a detailed study of the Navaho blanket; its origin and its history together with its relation to the prehistoric weaver's art in the Southwest.

THE WASHINGTON STATE MUSEUM formally opened its Oceanian Gallery on Thursday evening, March 12th. Mr. E. W. Gifford, of the University of California, installed the exhibit.

DR. ROBERT H. LOWIE was elected to membership in the National Academy of Sciences last April.

PROFESSOR AND MRS. RICHARD THURNWALD, who left Genoa about May 15th, 1930, for Port Said, Egypt, and thence to the Tanganyika Territory, East Africa, returned to Berlin the end of April of this year. On May 5, 1931, Professor Thurn-

wald resumed his lectures on ethnology and social psychology at the University of Berlin. Professor Thurnwald had been invited by the London International Institute of African Languages and Cultures to spend a year in the Tanganyika Territory, East Africa. Mrs. Thurnwald was of much assistance in making investigations among native women. Recent books of Professor Thurnwald are: Soziologie der Naturvölker; and Primitive Economics (in English).

DOROTHEA DEMETRACOPOULOU has been appointed as an instructor in the department of anthropology at the University of Washington for the academic year 1931–1932. She will handle the courses on social organization and folklore.

MR. VERNE RAY, a graduate student in the department of anthropology at the University of Washington, is continuing his field work in eastern Washington among the Sanpoil and the Lakes. Miss Velpha Walters, also of that department, is doing linguistic work with the Moses Columbia, an interior Salish tribe, under the auspices of the linguistic committee of the American Council of Learned Societies.

DR. PETER HENRY BUCK has been appointed lecturer in anthropology at Yale University. Dr. Buck was educated at the Aute Maori College and at the University of Otago. He graduated in medicine and became health officer for the Maori and later devoted himself to ethnographic research among the Maori. In 1927 he joined the Bishop Museum at Honolulu. His mother was a Maori princess.

ELSDON BEST, veteran Maori ethnologist, has signified his intention of retiring from the joint editorship of the Journal of the Polynesian Society.

DAVID TEVIOTDALE is working on the problem of the Maori in relation to the extinction of the moa (Dinornis) in the southern districts of New Zealand.

MR. ERWIN P. DIESELDORFF announces that in April 1931 Julius Springer of Berlin published his work entitled, Kunst und Religion der Mayavoelker, at the price of 7 Marks 50. It can also be ordered from the author himself, whose address is Coban, Republic of Guatemala.

B. B. GARDNER, instructor in Anthropology at the University of Texas, has been appointed as Ralph Sanger Scholar at Harvard, where he will continue his studies in anthropology. He has been working with Professor J. E. Pearce on various problems in Texas archaeology.

"THE ARCHAEOLOGICAL SURVEY OF EASTERN COLORADO," the first official publication of the University of Denver Department of Anthropology, will shortly be off the press.

DALE KING, of the Department of Anthropology, University of Denver, has received a field fellowship from the Laboratory of Anthropology. He will do field work this summer in Arizona, under Dr. F. H. H. Roberts, of the Bureau of American Ethnology.

DR. THERKEL MATHIASSEN will excavate in the Angmagssalik area this summer.

DR. KAJ BIRKET-SMITH has just returned from Vienna and Yugoslavia, where he studied the museums.

BERTHOLD LAUFER, president of the American Oriental Society, delivered the presidential address at the Society's annual meeting held at Princeton University on April 7. The subject of his address was: "Columbus and Cathay, and the Meaning of America to the Orientalist." He discussed the deep influence exerted by ancient Oriental traditions on the mind and exploits of Columbus and gave an outline of the interrelations of Asia and America in ancient times. The address is being published in the Journal of the American Oriental Society.

ERIC J. THOMPSON, of the Field Museum staff, is conducting excavations in British Honduras and ethnological investigations in Guatemala.

FIELD MUSEUM will continue its excavations this summer at the Lowry ruin, southwestern Colorado. The project is to be in charge of Dr. Paul S. Martin. The work of preserving the masonry will proceed as the digging progresses. It is hoped that time will permit of further explorations for the burial mound and of more work in the kivas.

DURING the months of March and April, Mr. Malcolm J. Rogers conducted a survey, for the San Diego Museum of the early Yuman fishing villages located along the terraces of the now extinct Blake Sea. This great body of fresh water once covered much of the Colorado desert and the time between its inception and extinction has been estimated at one thousand years. Fish seem to have constituted the chief food item of these people judging from the innumerable patches of charred fishbone found. In addition to the recovery of ethnological material from this hitherto unknown Yuman horizon, valuable information relative to early Yuman and Shoshonean culture boundaries was obtained.

REVEREND DR. EDWARD ASHLEY, who had spent fifty-eight years as a missionary among the Sioux Indians, died at Chamberlain, South Dakota, on March 30th, aged seventy-seven years. A small periodical known as Anpao ("The Daybreak"), valuable to the student of the Dakota dialects, was established by several missionaries at Greenwood in the present South Dakota in 1878, suspended for want of funds in 1882, but revived four years later by Reverend J. W. Cook and Dr. Ashley. During his long life among the Indians he became so familiar with the Sioux language as to enable him, in coöperation with other Episcopal missionaries, to translate the Bible, prayer-book, and hymnal into that tongue. In recognition of these labors he was given the degree of LL.D. by the University of South Dakota in 1911.

MR. EMIL TORDAY, known for his work on the anthropology of Africa, died on May 9, 1931, aged 56 years.

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